HANDBOOK
FOR
ATTENDANTS ON THE INSANE

FIFTH EDITION

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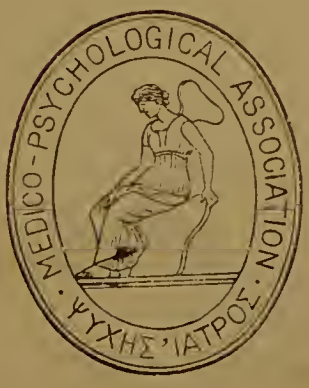
REVISED AND ENLARGED

THIRTY-THIRD 

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Published by the Authority of the Medico-Psychological Association

LONDON
BAILLIÈRE, TINDALL AND COX
8, HENRIETTA STREET, COVENT GARDEN
1908

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PREFACE TO FIFTH EDITION

A NEW edition of this Handbook has been made necessary by the extension of the system of training and examination for the Certificate of Proficiency in Nursing the Insane. It has been found, also, that in certain places the training already given has developed a strong demand for some advanced teaching. The scope of the book has therefore been enlarged considerably, and small print has been used for some of the advanced matter thus included. It must, however, be understood that under no circumstances does the use of large and small print attempt to indicate the limits to which examiners may go in settling the questions for examination. These limits, as heretofore, will be determined by the syllabus issued by the Education Committee of the Association.

The Committee of Revision desire to accord their best thanks to Drs. S. J. Cole, C. H. Fennell, J. Middlemass, D. Orr, E. F. Reeve, H. Roscoe, A. Rotherham, J. P. Sturrock, Tom R. Taylor, for aid rendered to individual members of the Committee in preparing those portions of the work which were allotted to them.

November, 1908.

COMMITTEE OF REVISION: **H. H. Newington** (*Chairman*), **J. Shaw Bolton, Maurice Craig, W. F. Menzies, Bedford Pierce, A. R. Turnbull, A. R. Urquhart, F. R. P. Taylor** (*Secretary*).

PREFACE TO THE REVISED EDITION

THE first edition having been exhausted, the Medico-Psychological Association entrusted to a committee of eleven members the task of revising and reissuing the work.

The Committee, taking into account the fact that it is by the authority of the Association republished as the official handbook by which attendants are to be trained, and on which they are to be examined for the certificate of proficiency, has in some respects altered and extended the scope of instruction. This has been proved to be desirable, and, indeed, necessary, by the experience of the capabilities of attendants which has been gained both by teachers and examiners in their carrying out the intentions of the Association in its scheme for training and certification of attendants and nurses.

Questions have been added to the work in order to assist learners in testing their progress towards mastering its contents.

(Committee of Revisers: H. H. Newington, Chairman; R. Baker, Fletcher Beach, C. MacIver Campbell, A. Campbell Clark, Conolly Norman, H. Rayner, J. Beveridge Spence, A. R. Turnbull, A. R. Urquhart, E. B. Whitcombe.)

1893.

INTRODUCTION TO THE FIRST EDITION

THIS Handbook has been prepared in the hope of helping attendants on the insane to a due understanding of the work in which they are engaged. It is sought to give them such simple notions of the body and mind in health and disease, such instructions for the management of those maladies with which they are usually brought in contact, and such rules for their guidance in matters of everyday experience, as will enable them to do their work with greater intelligence and watchfulness. It is designed that these instructions should aid attendants to carry out the orders of the physicians ; but it is to be distinctly understood that in no case is anything contained in this book to override the special rules of any institution or special orders in regard to any individual case.

(Compilers : A Campbell Clark, Convener ; C. MacIver Campbell, A. R. Turnbull ,and A. R. Urquhart.)

1885.

NOTE. — Throughout this book the terms **'nurse'** and **'attendant'** are used as equivalent and interchangeable.

References to patients and staff must be taken to apply to both sexes, except in those passages where, as shown by the context, a particular sex is under consideration.

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BOOK I

SECTION I

ANATOMY AND PHYSIOLOGY

INTRODUCTION.

The human body is, in essence, a highly complicated living machine.

It resembles a machine of human construction in that it burns fuel, stores energy, and produces movement. It is, however, more than such a machine, as it attends entirely to its own needs. It prepares its own fuel and the needful materials for its repair from various substances it takes into itself, and it replaces its various parts as they wear out. Further, it is capable of growth and of reproduction.

From another aspect the body resembles a large institution. It is very complicated in structure, and its different parts carry out their proper functions. It possesses a framework which supports and contains its more important parts. It possesses stores and kitchens for the accumulation, preparation and distribution of its fuel and food, and special mechanisms for the supply of pure and the removal of impure air, and for the removal of waste and useless materials. It differs from an institution in that its fuel and food are distributed, and its waste materials are removed by means of a water-carrier system which ceaselessly circulates round and round. This operation is performed by the agency of a force-pump and a

system of elastic tubes; and the fluid, as it passes along these, on the one hand collects pure air, fuel, and food to replace what it distributes, and on the other passes out into appropriate mechanisms both the products of combustion and the waste products of body-activity. The body still further differs from an institution in that both its whole and its several parts possess the power of movement.

The body is, however, much more complicated in its structure than the most elaborate machine or the largest institution; and, further, it differs entirely from these in the fact that every single element of which it is composed is individually alive. Imagine an institution in which every single brick or stone, and every piece of metal, wood or textile material are alive—an institution, moreover, which is able to execute its own repairs, and even to replace some of its units when they are worn out, and which does all this through the medium of the vital forces which pervade its every part!

The body is composed of innumerable small elements called **cells.** These cells are all exceedingly minute, and even the largest of them are barely visible to the naked eye. They are of various shapes and sizes according to the duties they have to perform. Some are solid or semi-solid and undergo little change for long periods. Such cells, when lying together by millions, form a support or framework for the remainder. Others are semi-fluid and resemble minute threads or droplets of jelly. Some of these are able to change their shape, and when massed together in vast numbers are thereby able to produce movements of parts of the body. Others of these are able to absorb food and to secrete nutriment for other tissues; others, again, can absorb waste-products and change them into simpler substances, which are then removed from the body. Other cells are massed together to form the walls of the tubes which carry the nutrient fluid throughout the body. Lastly, myriads of complicated cells are built up into a kind of telegraph system, and thereby

bring all the regions of the body into relation with one another and under central control.

By the suitable combination of all these various kinds of living cells, the body is built up into certain tissues, organs, and systems, namely :

The Skeleton or the Bones.—The skeleton forms the framework by means of which the more important parts of the body are supported and protected. The different parts of the skeleton are connected together by joints, which enable movements of the body and limbs to occur.

The Muscles.—The muscles form the flesh or lean meat of the body. Each separate muscle is able to vary in length, being at different times long and thin and short and thick. By means of the muscles the bones composing the skeleton can be moved about. Movements of the body and limbs are thus produced.

The Circulatory System.—This consists of the *heart*, which is a force-pump composed of muscle fibres, and of the *blood-vessels*, which form a system of tubes throughout the body and convey the *blood*. The blood carries oxygen, fuel, and food to the various parts of the body, and brings away from these all the waste products of combustion and of body-activity.

The Respiratory System.—This system consists of the *air passages* and *lungs*, which latter are composed of multitudes of small air-sacs, or air-vesicles. By means of the lungs the blood is supplied with pure air to be carried throughout the body, and is purified by the removal of a combustion-product, called carbonic acid gas, which it receives from the various parts of the body.

The Alimentary System.—This system consists of a long and irregularly folded tube. In it food is digested. The results of digestion are then absorbed by it, and are eventually passed into the blood. The undigested and waste portions of the food are discharged externally through the lower end of the alimentary tube.

The Kidneys.—These consist of a complicated mass of small tubes amongst which lie numberless small bloodvessels. The kidneys drain away from the blood those products of body-activity which result from the wear and tear of the body-constituents. The body does not, however, wear out (as does a machine) until old age is reached, as it is able to repair itself by means of the protein or nitrogenous food which it absorbs.

The Nervous System.—This system is composed of complicated cells which form a mechanism resembling an elaborate electrical installation. It consists of a complex central part, the *brain*, which controls the functional activity of the body, and by means of which we feel, think and act; of subordinate central portions, the *spinal cord* and *sympathetic system*, which carry out less important nervous functions under the genera control of the brain; and of a complicated system of *nerve fibres* which carry messages to and from every part of the body.

The Fat.—The body generally is padded with fat, which consists of small cells, each containing a minute globule of oil. The fat covers and protects the more delicate parts and organs of the body, and also serves as a kind of reserve coal-store.

The Skin.—Lastly, the body is covered with skin, which protects the underlying parts. It is firm, tough and resisting. The skins of animals, for example, when suitably preserved, form leather. The skin is well supplied throughout with nerve fibrils, and we are thereby enabled to feel—and thus protect ourselves from injury—and to acquire information with regard to the objects around us. By means of special and highly complicated modifications of the skin or other tissues, which constitute the organs of special sense, we are also able to receive more delicate sensations than those from the skin generally, and we thus can see, hear, smell, and taste.

The human body thus requires to be studied, as would a machine, from two points of view—namely, how it is made,

and how it works. In other words, it is necessary to consider, first, its *anatomy*, or structure, and, secondly, its *physiology*, or the functions or uses of its several parts.

MATERIALS OF THE BODY STRUCTURE.

The body is composed of innumerable minute elements called **cells**, which are of different sizes and shapes and possess different functions. These cells, according to their kind, are massed together into certain tissues, organs, and mechanical systems.

The different tissues vary greatly in their appearance. Some are bulky, and are readily seen and quite familiar to everyone. Such are the *skin*, *fat*, *muscle*, and *bone*.

Others, much smaller, and requiring to be carefully looked for, but equally important in their own place, are arteries, veins, nerves, lymphatic glands, etc.

If one could examine, immediately after the amputation of a limb, the surface of the stump, one would see that the four bulky materials are there in a certain relation to each other. One would observe outermost the tightly fitting and enveloping skin; beneath it a coating of fat; deeper still, and in much larger quantity, a red fleshy substance, which is muscle; and innermost of all, the bone itself. One would also notice embedded in the muscle, and, if one examined carefully, in the other parts as well, four lesser materials—arteries, veins, lymphatics, and nerves.

If, next, one could examine the body itself, which we shall call the trunk—supposing, for example, that it were divided above the waist into an upper and lower half, and that one looked down upon the lower section—two hollow spaces would be discovered: a very small one behind, the spinal canal, and a large one in front, the body cavity. These two cavities are walled in on every side by the same materials as in the stump. Outside, the skin; deeper, the fat; then the muscle; and innermost of all, the bone. Here also are seen the small materials

already mentioned. Once more, if one could examine the head when divided across above the ears and eyebrows into upper and lower parts, one would find a cavity the walls of which are constructed of similar materials. Of these several materials we shall now speak.

THE SKIN AND ITS FUNCTIONS.

The skin consists of two parts: (1) The outer, called the *cuticle* or *scarf-skin*, which peels off in large scales during convalescence from scarlet fever and some other diseases, and less visibly during washing of the hands; (2) the *cutis vera*, or the true skin, thicker and of finer texture. It contains nerves and bloodvessels. Further, in the skin are hair-tubes, or *follicles*, especially numerous where the hair grows thick; and in these the roots of the hair receive nourishment and transmit it to the hair. Lastly, in the skin are glands: (1) *sebaceous* (oily) glands, which lubricate the hair and give it a natural gloss; and (2) *sweat* glands, from which wells out perspiration over the surface of the skin.

The following are the **functions of the skin**: (1) To regulate the temperature of the body. This is done by the blood-vessels of the skin carrying blood to the surface of the body, and the outpouring of sweat from the sweat-glands. According to the state of dilatation or contraction of these vessels, more or less blood is carried to the surface, and consequently more or less heat given off by radiation. In hot climates gas-stokers and firemen throw off as much as 4 pounds of sweat in an hour, and yet their temperature is only about 98·4° F. (2) The skin drains off waste matter by the sweat-glands, and its importance as a drainage channel for waste matter should be clearly recognized. (3) External sensation is communicated from the skin. When people are frost-bitten they have no sensation in the part affected. (4) The skin is a protection and support to underlying structures. (5) It has a slight power of absorption, and that is why medicated ointments are rubbed into the skin.

FAT AND ITS FUNCTIONS.

Deeper than the skin is the fatty coat, which varies in thickness in different individuals. It is composed of minute fatty globules, in cells bound together in a fibrous meshwork. These globules are in the living body in a fluid, oily state. The **functions of fat** are: By its softness and elasticity the fat is well suited to cover and protect the underlying muscular structure, and in certain parts where padding is necessary it is found in more abundance. Fat helps to maintain an equal body-temperature, and is a protection from cold. It is also a storehouse of fuel, and people deprived of food literally live on their fat.

MUSCLE AND ITS FUNCTIONS.

This is the material which forms the flesh of animals. The flesh, if carefully dissected, is seen to consist of several distinct *muscles*, each enclosed in a sheath, and attached to the bones at its extremities. The attachments are usually by sinews or *tendons*, which are white and fibrous. The tendon attached to the fixed bone is the *tendon of origin*, and that to the moving bone the *tendon of insertion*. Between the origin and insertion of the muscle is a *joint*. The muscular structure of the body makes up its chief bulk, and is nearly half the weight of the body. The muscles, upwards of 500 in number, are mostly under the control of the will, and are then termed *voluntary*. They are the muscles which contract and move the limbs about as the will directs. In addition to these are other muscles and groups of muscular fibres, over which the will has no control, and they are termed *involuntary*. These act whether we are asleep or awake—*e.g.*, the muscular walls of the stomach, the intestines, the bloodvessels, etc., are involuntary. Under the microscope muscle is seen to consist of fine fibres of two kinds, *transversely striated* or *striped* and *non-striated* or *unstriped*. Striated muscular tissue is found in

the *voluntary* muscles, while non striated muscular tissue is found in the *involuntary* muscles. The muscle of the heart forms an exception ; though involuntary, it is faintly transversely striped.

The **functions of muscle** are : Muscular fibres have a power of contraction by which they shorten themselves, and so move the bones upon each other. They also are elastic, so that when one set of muscles acts—for example, to bend the arm—the opposite set relaxes or is stretched. These two functions, or uses, of muscle, *contractility* and *elasticity*, belong to the two kinds of muscle already mentioned—the voluntary and involuntary. The movements of the limbs, of the head and neck, etc., are *voluntary ;* but such movements as those of the heart and lungs, stomach, and intestines, are *involuntary*, and each kind of movement has its own kind of muscle. The functions of the muscular system will be again referred to.

BONE AND ITS FUNCTIONS.

On sawing or breaking any bone through, it will be seen that the outside layers of it are hard and compact, like ivory, while the inner part is more or less open in structure. If the bones were compact all through, they would be of much greater weight and of no greater strength, while the present arrangement allows for easy nutrition and growth. At the ends of the long bones and in the cancellous tissue of short bones and the ribs is a substance called red marrow, because it is very vascular. In it both red and white blood corpuscles are formed.

The **functions of bone** are : It serves to support the softer structures in their proper places ; to keep all parts connected and braced together ; to protect internal structures from injury ; and to enable the body and limbs to be moved in various directions.

THE FRAMEWORK AND MOVEMENTS OF THE BODY.

In the **skeleton**, or bony framework, there are over 200 **bones**, which are of three kinds: (*a*) long bones; (*b*) short bones; and (*c*) flat bones. The most important of the long bones are to be found in the limbs, and the ribs also belong to this class. Of short bones we have examples in the small bones of the wrist, hand, ankle, foot and face. The flat bones are seen in the *os innominatum* (haunch-bone), in the *scapula* (shoulder-blade), and in the bones of the *cranium* (skull). A few bones, such as the *vertebræ*, are *irregular*.

The **skull** is formed of twenty-two separate bones. Of these, eight belong to the cranium and fourteen to the face. The cranial bones are the *frontal*, forming the forehead; the two *temporals*, helping to form the temples; the two *parietals*, completing the vault and sides of the skull; the *occipital*, forming the back and part of the floor of the skull; and the *sphenoid* and *ethmoid*, which form the centre and front of the floor.

The most important bones of the face to remember are—

The *nasal*, forming the bridge of the nose.

The *malar*, or cheek-bones.

The *superior maxillary*, or upper jaw, which contains the upper row of teeth.

The *inferior maxillary*, or lower jaw, which contains the lower row of teeth.

The **spinal column**, or backbone, is the principal support of the body, and without it the skeleton would fall to pieces.

It consists of thirty-three small bones, called *vertebræ*. The upper twenty-four of these are jointed movably to each other, and form a flexible column, which resembles a cane walking-stick. The next five are welded together into one piece, the sacrum, which with the two haunch-bones forms the strong pelvic girdle. The remaining four vertebræ are very small, and are attached to the lower end of the sacrum. They form the *coccyx*, which is the human remnant of the tail of the lower

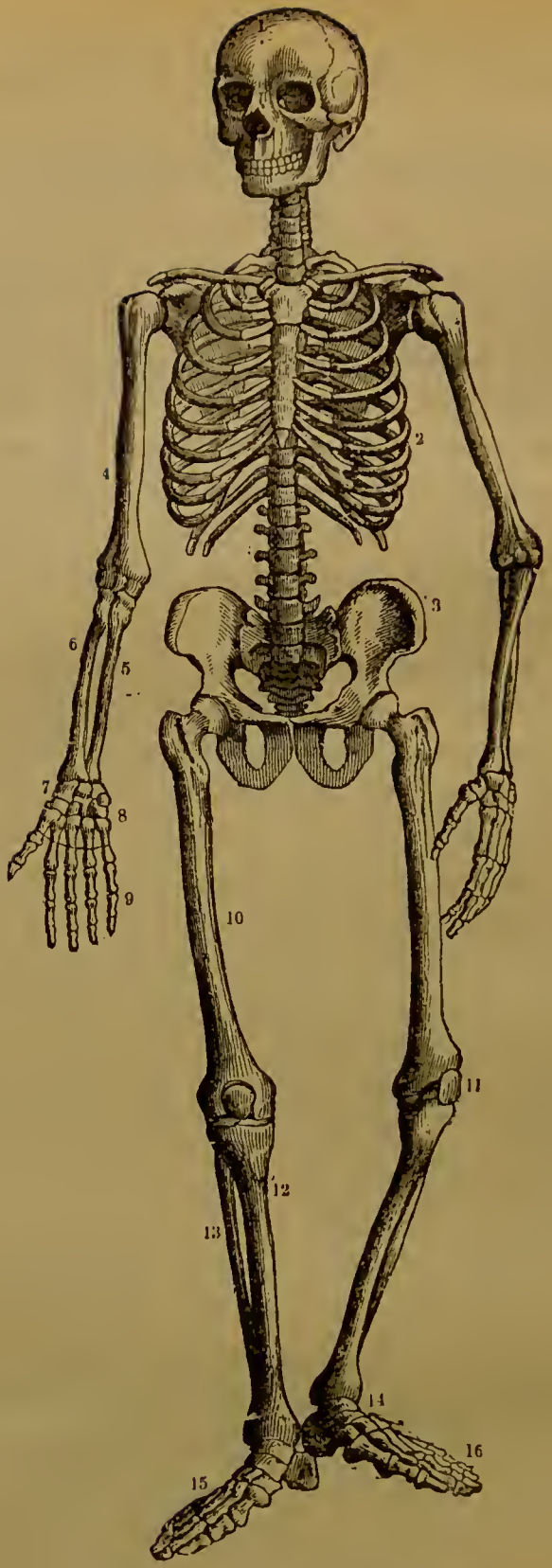


FIG. 1.—HUMAN SKELETON.

1. Skull. 2. Ribs. 3. Haunch-bone. 4. Humerus. 5. Ulna. 6. Radius. 7. Wrist-bones. 8 and 9. Bones of hand and fingers. 10. Femur. 11. Patella (knee-cap). 12. Tibia. 13. Fibula. 14. Bones of the ankle-joint. 15 and 16. Bones of the foot and toes.

animal. The spine is not rigid, but flexible and elastic, allowing of free movement, owing to the free action upon each other of the twenty-four movable jointed vertebræ. Of these, seven are *cervical* (or neck vertebræ), twelve are *dorsal* (or back vertebræ), and five are *lumbar* (or loin vertebræ). The back-bone, ribs, and breast-bone give its form to the cavity of the chest. On each side of the body of the vertebræ a plate of bone projects backwards and inwards, and, meeting its fellow, forms a ring. The superposition of these rings forms a tunnel

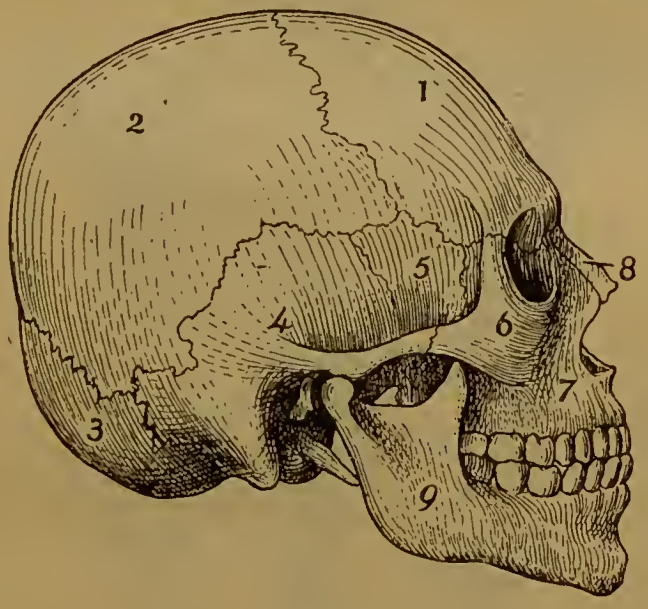


FIG. 2.

1. Frontal. 2. Parietal. 3. Occipital. 4. Temporal. 5. Sphenoid. 6. Malar. 7. Superior maxilla. 8. Nasal. 9. Inferior maxilla.

in which lies the spinal cord. To each dorsal vertebra the hinder end of a rib is jointed, and ten of these ribs are either directly or indirectly fixed to the breast-bone in front by gristle (*cartilage*). The gristle is more yielding than the bony ribs, and allows of free expansion and contraction of the chest. The upper seven ribs, being joined to the *sternum* (breast-bone), are called *true* ribs, while the remaining five are *false* ribs. Of these false ribs, three are united in front to the ribs above them; but the eleventh and twelfth have no fixed end in front, and so are called *floating* ribs.

The Upper Limb.—The shoulder is formed by the *clavicle* (collar-bone) and the *scapula* (shoulder-blade). The clavicle is jointed to the sternum in front and to the scapula just above the shoulder-joint. The scapula is a flat bone jointed at one point to the clavicle, and rests on the back of the upper ribs, where it is movably held by muscular attachments. In a shallow socket of the scapula rests the knob, or head, of the

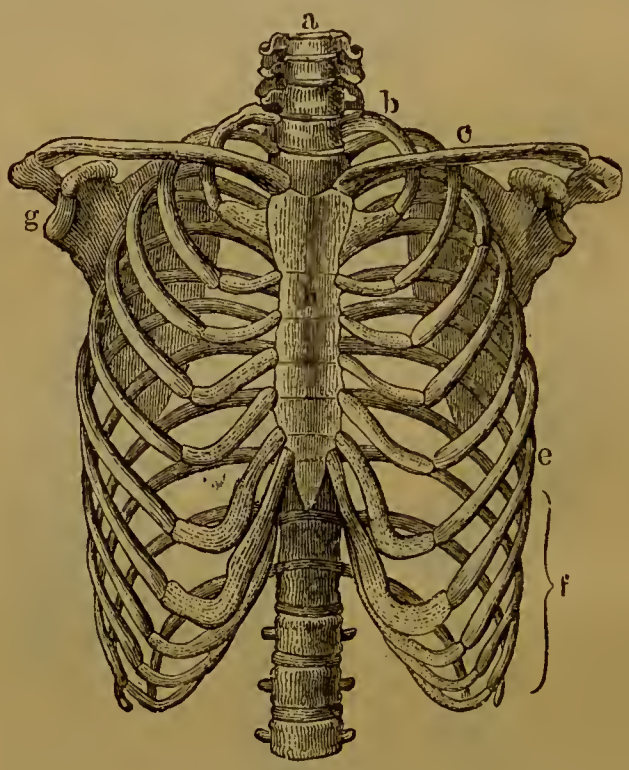


FIG. 3.

a. Vertebræ. *b*, *d*, *e*. Ribs. *f*. False ribs. *c*. Clavicle. *g*. Shoulder-joint. *h*. Sternum.

humerus, which is the bone of the upper arm, and with this resting-place it forms the shoulder-joint. To the lower end of the humerus are jointed the bones of the forearm, the *radius* and *ulna*, the ulna having the larger joint at the elbow, while the radius has the larger joint at the wrist. With the arm hanging by the side and the palm to the front, the ulna is next the body, but with the back of the hand to the front the radius is next the body, in the lower part of the forearm. The reason

of this is that the radius is jointed both to the wrist and to the ulna below, and, carrying the hand with it, is crossed over the ulna when the palm is looking behind. When the palm is looking forward, the bones of the forearm are side by side, and the position is called *supination;* when looking backwards, the radius is crossed over the ulna, and the position is called *pronation.*

The **lower limbs** hang on the hip-bones, which are fixed to the sacrum behind and to each other in front, thus forming the **pelvis.** In each half (right and left) of the pelvis is a deep socket, in which the knob, or head, of the *femur* lies, forming the hip-joint. The femur, or thigh-bone, is the largest bone in the body. It forms at its lower end, with the *tibia*, the knee-joint. Over this joint lies a flat bone—the knee-cap, or *patella.* The bones of the legs are the *tibia* (shin-bone) and the *fibula*, which is the outside bone. These two bones at their lower end form, with one of the bones of the foot, the ankle-joint.

Joints are of two kinds—movable and immovable. The bones of the cranium, for example, are jointed immovably; they do not play upon each other. The bones of the vertebral column have no joint-movements proper, and are therefore properly called immovable joints. But they are provided with pads of cartilage, which by their compressibility and elasticity allow of some movement between adjoining bones; by multiplication of bones the range of movement in the vertebral column is considerable. This column, in fact, when separated from its surrounding soft parts, almost resembles a cane in its degree of flexibility. Movement is effected by the placing together of two free surfaces of bone, which are covered with polished gristle; and the joint being lined with a smooth shining membrane, the ends of the bones play easily upon each other. Bones are bound together by fibrous bands called **ligaments,** so that in movement one bone surface is not dislocated from the other; such surfaces are lubricated by a fluid called *synovial* fluid. Some joints are capable of a wider range of movement than others; these are the *ball-and-socket* joints, such as the

shoulder and hip. Next in freedom of movement are the *hinge* joints, such as the knee, the elbow, the ankle, the wrist, and the joints between the bones of the fingers and of the toes. A third kind of movable joint is the *gliding* joint, where the surfaces glide over one another, as in the bones of the carpus and tarsus.

The movements which take place at the joints are of several kinds; thus, a joint can be bent or straightened, these actions being called *flexion* and *extension;* or the part may be moved away from the middle line of the body (*abduction*), or back again, towards the middle (*adduction*). Or, by a combination of these four movements, *circumduction* may be performed, as when one swings one's arm round to loosen the muscles before bowling at cricket. Lastly, a bone may rotate on its long axis, with the result that its end moves round with a circular motion; this is called *rotation*.

The following table of joints illustrates their characters—

	Name of Joint.	*Movement.*
I. IMMOVABLE:		
(1) Saw-edge.	Bones of skull.	
(2) Cartilage-pad.	Vertebral column.	
II. MOVABLE:		
(1) Gliding.	Carpus and tarsus.	Gliding.
(2) Hinge.	Elbow, knee, wrist, ankle, fingers and toes.	Flexion and extension.
(3) Ball and socket.	Shoulder, hip (to some extent the lower jaw and metacarpal joint of the thumb).	Flexion, extension, abduction, adduction, circumduction, rotation.

It will be noticed that hinge joints save muscular power, but have less freedom of movement than ball-and-socket joints.

The movements of the body and its parts depend (1) on the muscles, and (2), with some exceptions, on movable joints. The exceptions are some of the face muscles, abdominal muscles, etc. The *origin* of a muscle is the fixed

point; the *insertion* is the moving point. In the case of movable joints, these points are on opposite sides of the joints. Take, for example, the movements of a limb, say the

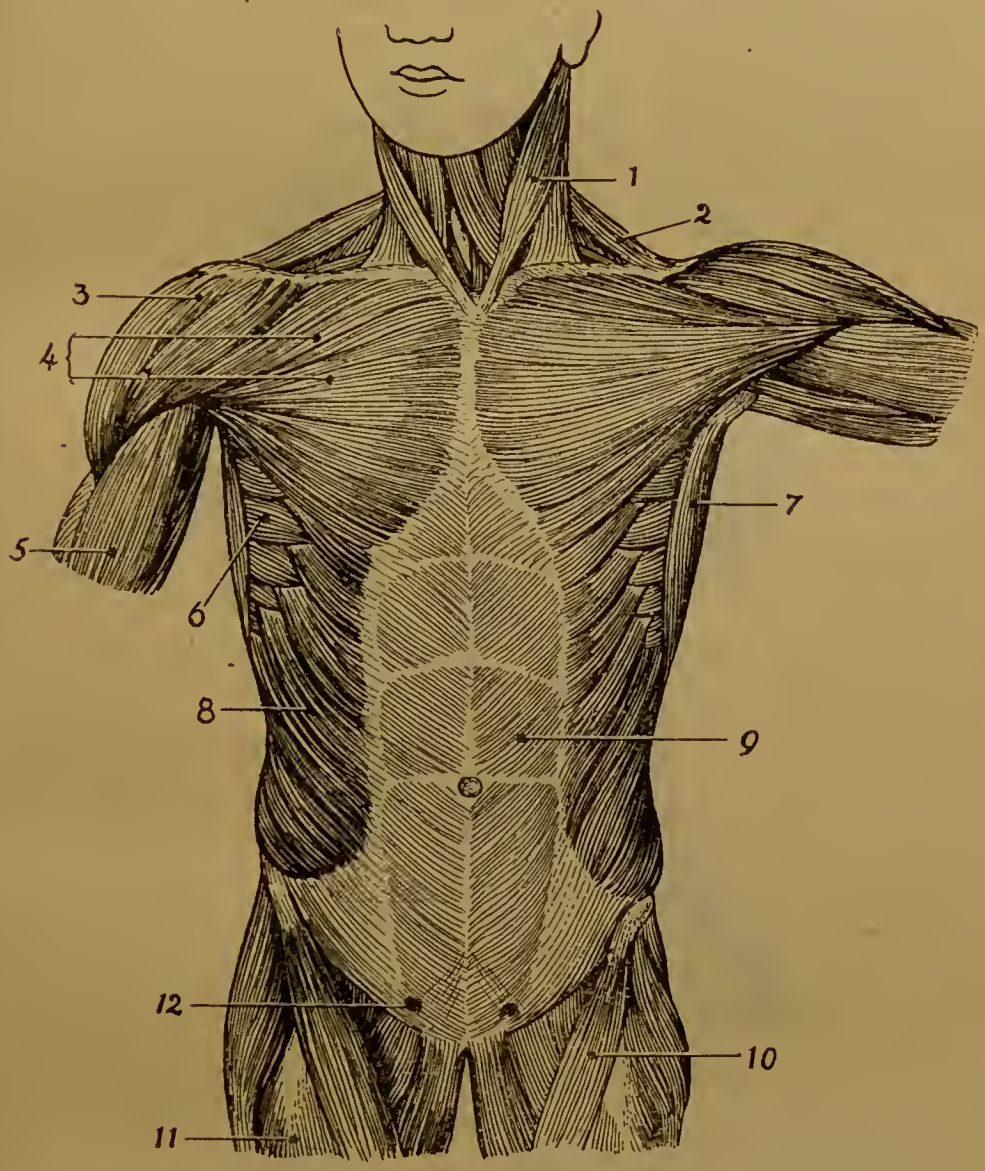


FIG. 4.—MUSCLES.

1. Sterno-mastoid. 2. Trapezius. 3. Deltoid. 4. Pectoralis major. 5. Biceps. 6. Serratus magnus. 6. Latissimus dorsi. 8. Obliquus externus abdominis. 9. Rectus abdominis. 10. Sartorius. 11. Rectus femoris. 12. External abdominal ring.

arm. When the upper arm is raised, the origin of the principal muscle (the *deltoid*) is on one side of the shoulder-joint, being attached to the clavicle and scapula, and the insertion

is on the other—*i.e.*, the humerus, or bone of the upper arm. Again, the forearm is bent on the upper arm by the *biceps* musele, whieh has its origin on the seapula, and its insertion into the radius, the elbow-joint lying between. The bieeps is the musele so well developed in the arm of the blacksmith.

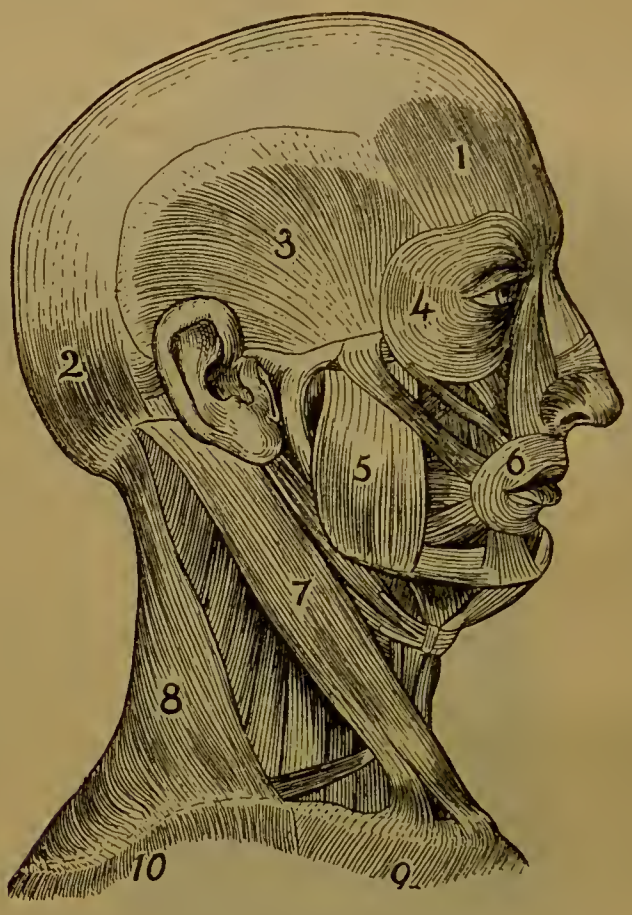


FIG. 5.—MUSCLES OF NECK AND FACE.

1 and 2. Occipito-frontalis. 3. Temporal. 4. Orbicularis palpebrarum. 5. Masseter. 6. Orbicularis oris. 7. Sterno-mastoid. 8. Trapezius. 9. Pectoralis major. 10. Deltoid.

Muscles in combination accomplish many varieties of movements, such as walking, swimming, rowing, writing, speaking, etc.

Muscles are used not only in producing motion, but also in resisting the movement of one part upon another— for instance, in keeping the arm straight, the teeth closed, etc. Muscles

which bend a limb are called *flexors;* those which straighten a limb are called *extensors.*

The act of standing is a muscular act, for without the antagonistic action of several groups of muscles balance would not be preserved, and it would be impossible to maintain the erect position. Many of the muscles of the face are extremely small and delicate, and the manifold expressions of which the face is capable are due to their endless variations and combinations of action.

STRUCTURE AND USE OF VARIOUS PARTS AND ORGANS OF THE BODY.

To understand the internal structure and the vital arrangements of the body construction it is necessary to consider its parts separately. These are: (1) the head; (2) the backbone; (3) the trunk; (4) the limbs.

In the *head* is the cavity of the skull containing the brain. In the *backbone* is a long tunnel running from the bottom of the skull to the pelvis, and in this tunnel lies the spinal cord (see p. 11).

The *trunk* is divided internally above the middle into two cavities by a fleshy partition called the *diaphragm*, or midriff. The upper cavity is called the *thorax*, or chest; and the lower, the *abdomen*, or belly.

In the chest are contained the heart and lungs, the *trachea* (windpipe) and bronchial tubes, large bloodvessels, and part of the *œsophagus* (gullet). In the abdomen are confined the stomach and intestines, the liver, pancreas (sweetbread), kidneys, spleen, bladder, large bloodvessels, etc. The lower part of the abdomen, surrounded by bony structure, is called the pelvis, and encloses the bladder, uterus, the lower end of the bowel, etc.

The contents of these cavities are called *organs.* Thus, we speak of the heart and bloodvessels as the *organs of circulation;* the lungs, windpipe, and bronchial tubes as the *organs of*

respiration; the gullet, stomach, and intestines, and other structures, as the *organs of digestion.* Several organs are thus seen to form a set by themselves, and to serve a particular use or function, so that several well-recognized and distinct operations are performed by organs specially formed for the purpose. These operations are dependent on each other, so that the body, though working in separate departments, cannot thrive without harmonious co-operation of the whole. These departments or systems may be classified as follows:

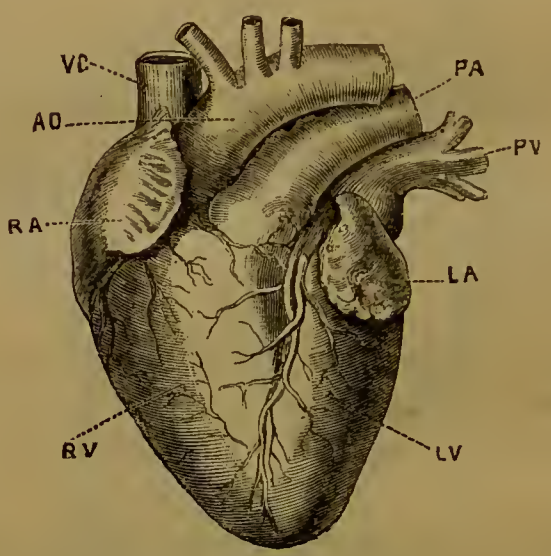


FIG. 6.—THE HEART.

VC. Superior vena cava. AO. Aorta. RA. Right auricle. RV. Right ventricle. PA. Pulmonary artery. PV. Pulmonary vein. LA. Left auricle. LV. Left ventricle.

(1) The circulatory system; (2) the respiratory system; (3) the alimentary or digestive system; (4) the excretory system; (5) the nervous system.

Circulatory System.

The mechanical arrangements for the circulation of the blood consist of a muscular pump (the heart) and a system of graduated elastic pipes (the bloodvessels). **The heart** is the beginning and the end of the circulation. It lies in the thorax,

behind and rather to the left side of the breast-bone between the two lungs, and its tip, or *apex*, may usually be felt beating between the fifth and sixth ribs of the left side in front. It is pear-shaped, the size of a closed fist, lies with its broad end above and its tip below, and weighs about 9 ounces. On cutting into it we find a hollow organ with cross-partitions, which divide it into four chambers, or cavities. These are placed two above (*auricles*) and two below (*ventricles*); or, to take another view, two to the right (right auricle and right ventricle) and two to the left (left auricle and left ventricle). The heart thus consists of two halves, a right and a left, each of which is divided into an auricle and a ventricle, and each of which performs its own duties. The right heart is responsible for the circulation of blood through the lungs alone; and the left heart is responsible for the circulation of blood through the rest of the body. The auricles serve as reservoirs for the accumulation of the blood required for each beat, and the ventricles serve as force-pumps for the discharge of these collections of blood into the pulmonary artery and aorta respectively. The heart is thus a reservoir and force-pump in duplicate. Like a pump, the heart is fitted with valves, which prevent a backward flow of blood. The heart *receives* blood and *discharges* blood, but there is no mixing or backward flow as long as the valves are healthy. Blood enters the heart at the upper cavities, and comes out from the lower cavities; it enters the auricles and comes out of the ventricles; therefore the auricles *receive*, and the ventricles *discharge* blood. The

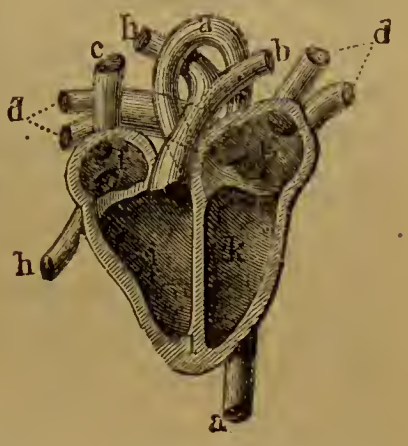


FIG. 7.—SECTION OF HEART.

a. Aorta. *b*. Pulmonary artery. *c*. Superior vena cava. *d*, *d*. Pulmonary veins. *f*. Right auricle. *g*. Left auricle. *h*. Inferior vena cava. *i*. Right ventricle. *k*. Left ventricle. *l*. Septum.

flow of blood *from* the heart and *to* the heart is conducted along the bloodvessels, a system of pipes which gradually get smaller and smaller as the distance from the heart is increased. This has been compared to the water-supply of a town or district: pipes beginning with a *main* issuing from the reservoir, then dividing into district branches, then into street branches, and lastly into the smallest branches of all—the

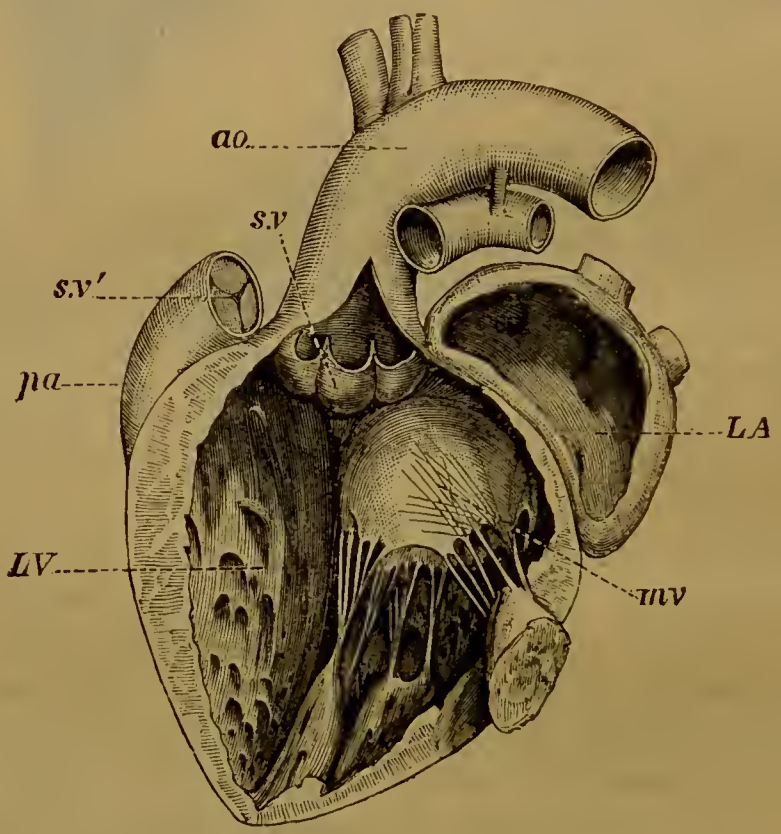


Fig. 8.—Dissection of Left Side of Heart of Man.

ao. Aorta. pa. Pulmonary artery. sv, sv'. Semilunar valves. la. Left auricle. lv. Left ventricle. mv. Mitral valve.

house branches. But the pipes of the blood circulation are not rigid; they resemble indiarubber tubes to the touch, and they are largely composed of elastic tissue. Like the heart, they contain muscle in their walls, and are capable of contraction and expansion. Those which convey blood *from* the heart are called *arteries;* those which convey blood *to* the heart are called *veins*. The smallest arteries or *arterioles* end

in *capillaries*, so called because they are hair-like in size. Capillaries in turn end in veins, which increase in size as the branches join each other. Veins differ from arteries in having less muscle in their walls, and in possessing valves.

The vessels which open *into* the two auricles are all veins, for they carry blood *to the heart;* those which open *out* of the ventricles are arteries, for they carry blood *from the heart.* Into the right auricle open two veins: (1) *Superior vena cava*, carrying blood from all regions *above* the heart, including the arms; (2) *inferior vena cava*, carrying blood from all regions *below* the heart, including the legs. Into the left auricle open four *pulmonary veins*, two from the right lung and two from the left lung. From the right ventricle rises the *pulmonary artery*, which branches off right and left to the two lungs. From the left ventricle rises the *aorta*, the main supply artery for the whole body.

In order to understand the **route of the circulation**, we must now examine the interior of the heart more particularly. The *right auricle* has three openings: two venous openings (superior and inferior vena cava), and one larger opening (*tricuspid*) through the partition that separates it from the right ventricle. The *right ventricle* has two openings: the one just mentioned, guarded by valves to prevent blood being driven back into the auricle, and one into the pulmonary artery, also guarded by valves to prevent return flow into the ventricle. In the *left auricle* are four venous openings for the pulmonary veins, and a larger one (*mitral*) through the partition which separates the auricle from the ventricle. The *left ventricle*, like the right, has two openings, one communicating with the auricle above, as on the right side, and one into the aorta, both being also provided with valves. Observe that the heart chambers have no communication between right and left, but only between upper and lower chambers.

Briefly, the course of the blood in the heart is as follows: It enters above (right) and emerges below (right); thence to the lungs and back; it enters above (left) and emerges below

(left). The blood passing through the right chambers of the heart is impure blood from the body, which goes to the lungs; that passing through the left chambers is pure blood from the lungs, which goes to the body. Let us now follow the route of the circulation. Observe, first, the two large veins opening into the right auricle. They empty into it impure blood from all parts of the body. This passes through the tricuspid orifice into the right ventricle. The right ventricle then contracts, the tricuspid valves close to prevent backward flow, and the blood is propelled into the pulmonary artery, the valves of which in turn close to prevent backward flow or *regurgitation.* It is then carried to the lungs, where it circulates, and then, being purified, returns to the left side of the heart, and empties itself into the left auricle. Thence it passes through the mitral orifice into the left ventricle, which contracts and expels it into the aorta. The valves, as on the right side, come into play in the same order. Along the aorta the blood is now carried, and follows the course of the large branches which emerge from it. These branches in turn divide and subdivide, the blood passing through the various gradations in size until it reaches the capillaries, where the current becomes slower, after a time passing out into small veins. The small veins join together to form larger veins, and as they near the heart the size gradually increases, until two very large veins—the superior and inferior venæ cavæ—become sufficient to carry all the blood into the heart.

We have, therefore, to distinguish two circulations—**a body circulation** and a **lung circulation.** If we follow the blood from the heart, whence it flows into the aorta, and trace it passing from larger into smaller arteries, thence into capillaries and then into veins, we shall find that as it flows along it distributes nourishment, and, in exchange for the nourishment, it drains away waste matter from the various organs through which it flows. In proportion as it receives waste so it gives forth nourishment; then, having reached the veins, its supply of nourishment is exhausted, the bright red

colour is gone, it contains waste, and is therefore impure. The blood which has left the heart pure thus comes back impure. The oxygen which it received in the lungs is given to the body to maintain life; the carbonic acid taken from the body must be carried to the lungs, to be thrown off at every breath. Therefore it leaves the heart a second time, and passes into the lung circulation; and if we follow it there, we find that it becomes purified by taking up oxygen from the fresh air, and throwing off a great deal of its waste matter, which is expelled into the outer air by the lungs. It returns then to the heart, and is now fresh for nourishing the body again. The blood does not derive all its nourishment from the lungs, nor does it give all its waste to them; but this will be explained by-and-by. It will therefore be understood that there are two distinct and separate streams of blood in the body—a short, circular stream between the heart and lungs, called the *lung circulation*, and a longer stream and wider circle, called the *body circulation* (*systemic*).

Before proceeding further it is necessary to mention here a further system of vessels which carries a fluid called *lymph* and constitutes the **lymphatic circulation.** The individual elements of which each tissue is composed lie *outside* the blood capillaries, and are bathed in lymph, which resembles the fluid part of the blood in composition, and is formed by the soaking or exudation of this from the blood capillaries. The tissues are nourished by the lymph, which contains the albumen, sugar, oxygen, etc., required for the performance of their functions, and also the carbonic acid, etc., produced by the exercise of their functions. When the lymph is excessive in quantity, and is consequently poor in quality, *dropsy* results. The individual tissue elements live or float in a bath of lymph, which fluid, owing to the pressure of the blood in the bloodvessels, is, of course, continually escaping from them. The lymph passes into *intercellular spaces*, which form a meshwork around the cells composing the tissues, and which, outside the tissues, gradually take on more and more the shape of small tubes or *lymphatic vessels.* These lymphatic vessels are at first minute, but increase in size by joining together, and eventually form trunks about the size of a crow's quill, which open into the large veins of the neck. During their course the lymphatic vessels pass through a number of small bodies, like beans, called *lymphatic glands*, which manufacture and discharge into the lymph, and thence into the blood stream,

the *white blood corpuscles*. The lymphatic glands destroy such poisons and microbes as may enter the lymph stream from, for example, a poisoned wound, and prevent these from passing along into the blood stream.

The largest of the lymphatic trunks is called the *thoracic duct*; it is formed by the coalescence of those special lymphatic vessels, or *lacteals*, which convey the lymph from the intestines. The lacteals perform the important function of carrying the fat, absorbed from the intestines during digestion, into the thoracic duct, and thence into a large vein on the left side of the neck.

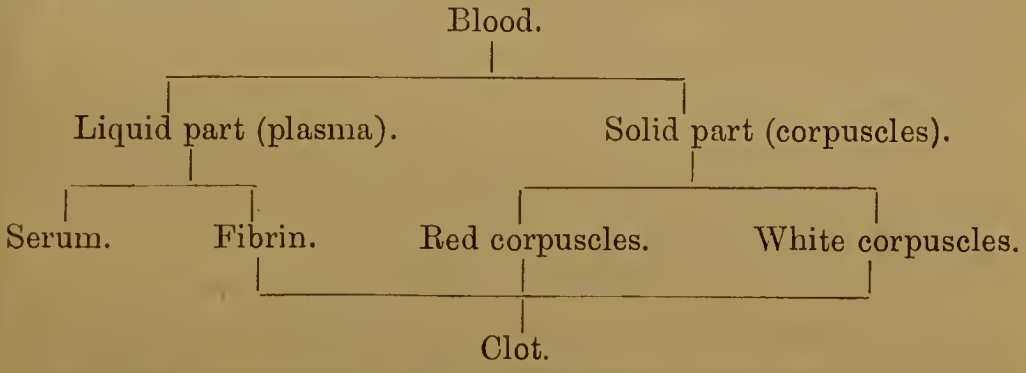
We must now inquire whether the heart alone is sufficient to keep up this perpetual circulation of blood day and night. Is a pump all that is required? Our answer is, No. Although the heart is as necessary for the circulation as our limbs are for movement, it requires to be assisted, and could not do its work without assistance. The heart is the force which sends the blood out of the heart, but muscular exercise must help it back again. If the heart receives blood slowly and feebly, it must pour out blood slowly and feebly, and thus the circulation loses its vigour and the body is not well nourished. Two things are necessary for a healthy and efficient circulation: first, a sound heart and sound vessels free from obstruction; second, muscular exercise. Further, the circulation cannot be properly carried on unless all other organs, especially the lungs, are in vigorous action.

Blood consists of *blood-cells* floating in a fluid called plasma, which by itself is straw-coloured, though the blood is red. Blood-cells, or corpuscles, are of two kinds—*red cells*, which give the red colour to the blood, and *white cells*. There is only 1 white cell for every 400 red ones in the healthy state. The red corpuscles are the oxygen-carriers, and the bright-red colour of the blood depends on the presence of oxygen in the red blood-cells. The white cells are capable of independent movement. They assist in keeping the blood pure by destroying poisons and the germs of diseases; in other words, they act as scavengers. The fluid part—or, as it is also called, the *plasma* of the blood—contains much nourishment in solution. It is really a liquid store for all the tissues, from which to draw what building-up material they require. The plasma is

fed by the digestive organs after the food has been digested and absorbed.

Dissolved in the plasma are fibrinogen, serum albumin, serum globulin, and fibrin ferment. As soon as the blood becomes stagnant or reaches the air, it commences to clot, or *coagulate*. This is due to the fibrin ferment acting upon the fibrinogen, causing it to form fibrin, an insoluble, thread-like material, which entangles the corpuscles at the same time, and thus a clot is formed. After a time the clot shrinks and squeezes out a fluid called *serum*. When a bloodvessel is injured or cut, as in a surgical operation, a similar clotting of the blood ensues. The purpose of clotting is to stop bleeding.

The following table shows the composition of the blood and the formation of a clot:



Division or rupture of a bloodvessel gives rise to hæmorrhage, or bleeding. This may be (1) arterial, (2) venous, or (3) capillary.

Arterial, bright-red blood, spurts out in jets like the jets from a water-fountain.

Venous is dark red, and the flow is not jerky, but continuous.

Capillary consists of a general oozing from all parts of the wound, and the blood is brighter than venous blood.

Before passing to the next subject, it is well to point out here the **position of the more important bloodvessels**. The larger arteries and veins are called by particular names. The *aorta* arches backwards and from right to left after leaving the heart, and from this arch rise branches to the head and neck and the arms. Following its course downwards, the aorta continues as a large main pipe, under the name of the *abdominal aorta*, giving branches to the organs, and dividing

at last into two branches—the *iliac* arteries, which enter the thighs and supply the lower extremities.

Beginning with *the head and neck*, we now observe particularly the names and position of the large arteries and veins:

Arteries.—(1) *Common carotid*, the chief artery of the neck; it sometimes suffers in severe suicidal wounds of the neck. Below the level of the lower jaw it divides into *internal carotid*, which enters the skull and supplies the brain, and *external carotid*, which supplies the upper part of the windpipe (the larynx), and gives off branches—*facial*, *temporal*, and *occipital*, etc.—which supply the face and scalp. (2) *Subclavian*, which lies deeper than the clavicle (collar-bone), and courses to the *axilla* (armpit) to supply the arm. The *large veins* here, as elsewhere, are generally lying side by side with the arteries, and bear the same name; but in the neck the *external jugular* is near the surface, and in cases of obstructed circulation appears prominently beneath the skin.

Vessels of the Arm.—The subclavian artery, on entering the armpit, is called the *axillary*. It courses down the upper arm, alongside the inner edge of the biceps, as the *brachial* artery, and at the elbow divides into two branches—the *radial*, which may be felt pulsating on the thumb side of the wrist; and the *ulnar*, which may be felt less distinctly on the 'little' finger side of the wrist.

Vessels of the Lower Limbs.—The iliac artery, entering the thigh at its upper end, passes downwards and inwards along the side of the thigh, as the *femoral* artery, which, behind the knee and between the hamstrings, becomes the *popliteal* artery. In the leg the popliteal artery divides into the *anterior tibial*, lying alongside the tibia, or shin-bone; the *peroneal*, running down on the outside of the leg; and the *posterior tibial*, embedded beneath the muscles of the calf. These all, directly or indirectly, contribute to the circulation of the foot and ankle. It is necessary that these arteries should be localized in the living body, and therefore no attempt at more precise description of their positions is made here.

The Pulse.—Every volume of blood pumped by the heart into the elastic arteries should produce a pulse, so that for every heart-beat we should have a pulse-beat. The pulse enables us to judge how the heart does its work—whether it pumps too slowly or too quickly, whether it is strong or weak, full or empty, regular or irregular.

The average number of pulse-beats in the minute is seventy for a man and eighty for a woman.

The Respiratory System.

The organs of respiration are the lungs and air-passages. The **air-passages** are: (1) The *larynx* (or voice-box), which can be easily seen and felt beneath the lower jaw. Continuing downwards, the air-tube is called (2) the *trachea* (windpipe), which, having descended through the neck and entered the thorax, divides into two branches—(3) the right and left *bronchi* — going to the lungs, where they branch and subdivide again and again, finally entering (4) the *air-vesicles*, which are delicate and minute air-sacs of microscopic size.

The **lungs** are of spongy consistence, and in early life are of a delicate pink colour. They acquire a darker colour as life advances, and particularly in town-dwellers, owing to the smoke which exists in the atmosphere of towns and which is being continually inhaled. When squeezed, they give forth a fine, creaking sound, due to escape of air from the air-cells; but when pressure is relaxed they expand. Each lung has a delicate, glossy covering called the *pleura*, which also lines the chest and the upper part of the diaphragm, and, being lubricated by a secretion, allows of easy expansion of the lungs without undue friction against the walls of the chest. When healthy the lungs float in water; hence the familiar name of 'the lights.' The lungs are two in number, and are placed in the right and left sides of the chest, the top, or 'apex,' of the lung lying underneath the clavicle (collar-bone), and the 'base,' a broad expanse of lung-substance, covering the upper surface of the *diaphragm* (or midriff).

A factor of some importance in respiration is the elasticity of the lungs, which is mainly due to a peculiar structure only seen in the lungs, and which consists in the grouping together in clusters (like grapes) of extremely minute air-vesicles, which have elastic fibres in their lining walls, and except during expiration are open or distended. These air-vesicles are connected with the windpipe (as mentioned above), and when air is breathed it diffuses down to all these air-vesicles.

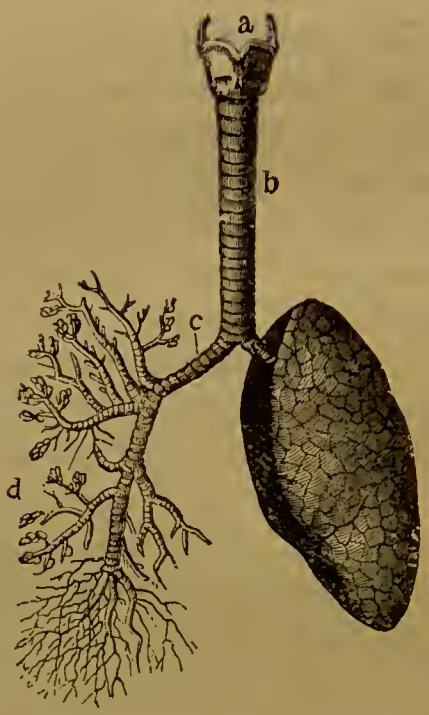


FIG. 9.—LUNGS AND WINDPIPE.

a. Larynx. *b*. Trachea. *c*. Bronchus. *d*. Smallest branches of the bronchus.

Now, over the surface of the air-vesicles run capillaries carrying impure blood: the air and the blood make an exchange: the air gives oxygen gas to the blood, and the blood gives carbonic acid gas to the air.

Respiration consists of three stages: *inspiration*, when air is drawn in; *expiration*, when air is expelled; and a *pause*.

During inspiration the diaphragm contracts and is drawn down, and the chest-walls are pulled up; the lungs, following

these movements, expand, and air rushes in. During expiration the diaphragm ascends, the chest-walls descend, and the lungs, in virtue of their elasticity, recoil; air is therefore expelled through the bronchi and windpipe.

The act of respiration, therefore, is mainly carried on by the diaphragm and the muscles of the chest-walls (the *intercostal muscles*). But the abdominal muscles also help in expiration, for if they are forcibly contracted on the contents of the abdomen, the latter push up the diaphragm, and thus help to squeeze the air out of the lungs. Women who lace tightly deprive themselves of this great aid. It must be borne in mind that during inspiration the diaphragm descends and the ribs ascend; during expiration the diaphragm ascends and the ribs descend.

Fresh air contains a large supply of oxygen, the gas necessary for healthy respiration. Expired air is impure; for, besides containing less oxygen than is necessary for life, it contains a large percentage of carbonic acid gas.

Carbonic acid gas is a colourless, invisible gas which is the chief product of combustion of all kinds. It is the most constant constituent of the 'smoke' of chimneys, etc. The greater portion of the carbonic acid gas in the atmosphere arises from this source. The carbonic acid gas which is exhaled from the lungs is formed by the combustion of the sugar and fat contained in the body. This is the source of our bodily energy, just as the combustion of coal is the origin of the motive power of machinery.

Ordinary fresh air is of fairly uniform composition; it consists chiefly of a mixture of three gases—*nitrogen*, *oxygen*, and *carbonic acid*—with a variable quantity of watery vapour. The following table will roughly show their respective proportions:

Nitrogen	79·00
Oxygen	21·00
Carbonic acid	·04

In this country there is a small proportion of watery vapour.

The impurities of the atmosphere are not only an increased quantity of carbonic acid due to overcrowding of people and dwellings in towns, with want of sufficient ventilation, but there may be also present minute harmful bodies called micro-organisms.

Thorough *ventilation* admits a plentiful supply of fresh air, and expels an equal quantity of bad air. It is, therefore, important to secure free movements of air—of fresh inwards, and impure outwards. In this way only can the lungs be well supplied and do their work thoroughly.

In health the adult breathes from fifteen to eighteen times a minute, children from twenty to twenty-five; but breathing is more rapid during and after exertion or excitement.

The following facts should be carefully noted:

(1) Under healthy conditions we inspire pure air, and expire impure air.

(2) Under healthy conditions the lungs receive impure blood, and send back pure blood.

(3) Pure air helps to make pure blood, and impure blood makes impure air.

(4) The more the lungs expand, the more air they take in, and the better the blood is purified.

The Alimentary System.

The alimentary system receives food, digests it, feeds the circulation, and discharges the refuse of the food from the bowels. Its apparatus begins with the mouth, ends with the lower end of the bowel—the *anus*—and consists essentially of an open tube (*alimentary canal*), closed at certain points by muscular rings, or valves, and extending (from mouth to anus) a distance of nearly 30 feet.

We may conveniently regard this long tube as composed of three lengths: *First*, from the mouth through the *pharynx* (back of throat) to the *œsophagus* (gullet), which is narrower, lies behind the windpipe, and descends through the diaphragm into the stomach. *Second*, the *stomach*, which is an expanded

portion of the tube—a large bag intended as a temporary receptacle for the food. *Third*, the *intestines*, consisting of the *small intestine*, about 20 feet long, which ends below in the *large intestine;* the latter is 5 or 6 feet long, and terminates at the *anus*. The whole tube is called the 'alimentary canal.'

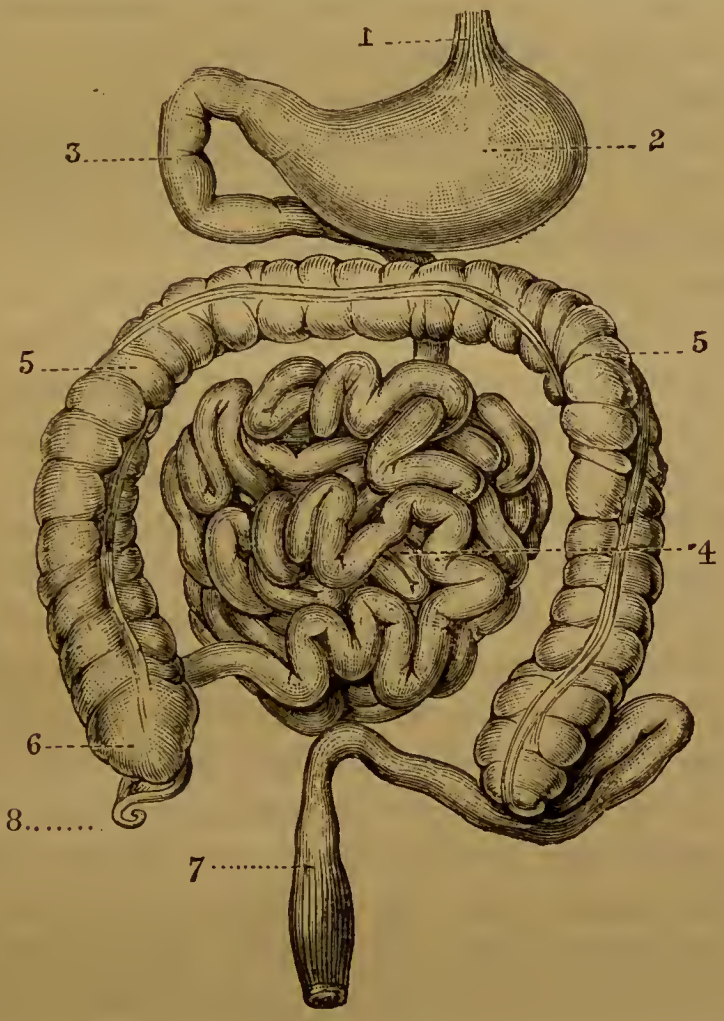


FIG. 10.

1. Lower end of gullet. 2. Stomach. 3. Duodenum. 4. Small intestine. 5. Large intestine. 6. Cæcum. 7. Bowel ending in anus. 8. Vermiform appendix.

Associated with the alimentary canal are two other important organs, the **liver** and the **pancreas** (or sweetbread). The liver communicates with the upper end of the small intestine (the *duodenum*) by means of the *bile-duct*, which pours bile into the duodenum during the process of digestion. The pancreas also communicates with the duodenum by means of a similar

tube, called the *pancreatic duct*, which pours pancreatic juice into the duodenum.

The liver and pancreas are large glands, lying in the abdomen near the stomach, which exercise a function common to all glands—that of *secretion*, of which more by-and-by.

But we must take note of other glands concerned in digestion as well, and, beginning with the mouth, we shall take them in their order downwards.

There are *salivary glands* which pour saliva into the mouth, namely, the *parotid* glands, lying in front of the ears; the *sublingual glands*, lying in the floor of the mouth; and the *submaxillary glands*, lying under cover of the lower jaw; *gastric glands*, which are numerous microscopic tubes lying in the wall of, and opening into the interior of, the stomach; and *intestinal glands*, also microscopic tubes, opening into the interior of the intestine and lying in its walls.

To follow intelligently the **order of digestion**, we must observe in their turn the various parts concerned in the digestive process. We begin with the mouth, which receives food. Observe the muscles of the jaw and the teeth for chewing, the salivary glands for providing saliva, the tongue for rolling the food about and throwing it backwards, the muscular parts of the throat for forcing the food backwards and downwards, and the *epiglottis*, a valve for preventing the food being carried into the windpipe. The pharynx and gullet are muscular tubes, lined with a smooth, glossy membrane, that allows of the food gliding easily down. The pharynx is the more capacious, and connects the mouth above with the gullet below. It has voluntary muscle, while the gullet has involuntary muscle. The **stomach** comes next, and its shape is familiar to those who have seen the bagpipes, which are really the stomach of a pig. It is narrowed at the two extremities, and can be closed or opened by the contraction or relaxation of muscular rings. It is a muscular bag lined with a smooth, shining membrane, and having an outer coat covering the muscle. On the internal surface are

numerous openings visible under the microscope, which are the outlets of the gastric glands.

At the lower or *pyloric* end, the stomach opens into the duodenum, and thence the channel is free all the way to and along the large intestine. The intestines resemble the stomach in structure, having three coats—an inner glossy (mucous), a middle (muscular), and an outer (peritoneal). They have also minute orifices on their internal surface, from which ooze out the juices of the glands. At the anus another muscular ring is found, called the *sphincter*.

The facts about digestion can best be understood by first considering the varieties of food. Two purposes are served by alimentation: *First*, the supply of fuel for the production of bodily energy and heat. *Second*, the building up or repair of organs and tissues, for wear and tear is always going on. Foods may be classed thus:

(1) *Protein* (nitrogenous). Examples: white of eggs, lean meat, casein of cheese or milk, gluten of flour or oatmeal.

(2) *Fats*. Examples: oil, cream, fat, lard, butter.

(3) *Starches and sugars* (carbohydrates). Examples: potatoes, rice, sugar, beetroot.

(4) *Minerals and water*. Examples: soda, common salt, lime (phosphate), magnesia and liquids.

The *protein* foods are chiefly employed for the repairing of the wear and tear of the body. They are converted by digestion into a soluble substance called *peptone*, which after absorption is manufactured into body-albumen. This is then conveyed throughout the body as one of the constituents of the plasma of the blood. The *fats*, *starches* and *sugars* are used as fuel for the production of body-energy. The *minerals* and *water* are required in order to keep in solution the various food materials and waste products and to supply the necessary amount of fluid to the living body tissues.

The glands are well supplied with blood, and from certain materials selected from the blood they secrete or manufacture fluids having properties of their own. Thus, we have gastric

glands, salivary glands, etc., which prepare fluids peculiar to themselves, and having a precise chemical character and function. The digestive fluids, which are secreted by glands, are: (1) the *saliva*, which acts on starchy foods: (2) the *gastric* or *stomach juice*, digesting such things as white of egg, lean meat, and other albuminous foods: (3) the *bile*, which enters the duodenum and reduces fats to a soapy condition, and so fits them for absorption. The bile also stimulates the muscular wall of the intestine properly to carry out its functions, and at the same time serves to some extent as an intestinal antiseptic. (4) The *pancreatic juice*, which also flows into the duodenum and acts on albumens, like the gastric juice; but, like the saliva, it also acts on starchy foods, and, like the bile, reduces fatty foods to a state fit for absorption. The pancreatic juice is the most powerful of the digestive juices, and acts on all kinds of food-stuff. (5) The *intestinal* or *bowel juice*, which acts like the pancreatic juice, though more feebly.

We now follow the stages of the alimentary and digestive process in regular order.

First comes chewing and salivary digestion, which takes place in the mouth, where starchy food is partially converted into sugar.

The food is here converted into a pulpy and soft mass (*bolus*), after which it is swallowed. The various steps in the act of swallowing are: the jaws coming together, the tongue rises to the roof of the mouth, and presses the bolus backwards into the throat, where it comes under the action of the muscles of the palate. These send it farther back into the grip of the muscles of the pharynx, which 'hand over hand,' as it were, close upon it and send it into the gullet. Here it is pressed down by the involuntary muscle of the gullet, and reaching the upper (*cardiac*) end of the stomach, the muscular ring, already described, relaxes, and the bolus passes through into the stomach. The ring then closes tightly to prevent it coming back to the mouth again.

Soon after food enters the stomach **gastric digestion** commences; the gastric juice wells out and pours over it, the muscular walls contract, and the stomach moves from side to side so as to churn the food and expose its every particle more freely to the action of the gastric juice.

After food has entered the stomach, the gastric juice requires about half an hour for its secretion in sufficient quantity, and during this time the saliva continues to act on the starches. As soon as sufficient gastric juice is produced the saliva is destroyed, and gastric digestion proceeds.

After an interval of three to five hours **intestinal digestion** commences; the food pulp, which in the stomach is called *chyme*, pours through the lower (*pyloric*) opening into the duodenum. Here, and lower down, it meets in turn with the remaining digestive juices, which act upon it, while the intestinal tube rolls about, worm-like, and passes it gradually on until it is fully digested, and the waste is expelled into the lower bowel. Here water is absorbed, and the *fæces* thus become semi-solid. These are periodically expelled from the rectum by the act of defæcation.

Absorption of most of the digested foods takes place (as body-albumen and body-sugar) through the lining membrane of the intestines into the capillaries, or small veins. These products of digestion are carried by means of the *portal vein* to the liver, which, especially in the case of the sugar, acts as a storehouse, and, however much it receives, doles out regular and constant quantities into the hepatic veins, and thence into the general circulation. The fat, however, which cannot be absorbed *as fat*, has to be made into a soap, which, after absorption, is changed into particles of body-fat, and these then pass into special tubes which lie in the lining of the small intestine. These tubes, called *lacteals*, carry the body-fat into the lymphatic glands, through which it filters, and ultimately, by channels called *lymphatic* tubes or lacteals, enters into the blood circulation. The lymphatic circulation is a separate system; but it is intimately con-

nected with the blood circulation, acting both as a drain from the tissues and a direct feeder by means of a duct (*thoracic duct*), which enters the blood circulation in the neck.

The principal facts here stated concerning digestion and absorption are set out in the following table:

Alimentary Canal.	*Secreting Glands.*	*Secretions of Glands.*	*Class of Food acted upon.*	*Conversion.*	*Absorption.*
Mouth.	Salivary glands (parotid, etc.).	Saliva.	Cooked starches.	Sugar.	Into capillaries of intestines.
Stomach.	Gastric glands.	Gastric juice.	Nitrogenous (protein).	Peptones.	Into capillaries of stomach and intestines.
Duodenum.	Liver.	Bile.	Fats.	Emulsified and saponified.	Into lacteals.
	Pancreas.	Pancreatic juice.	Starches.	Sugar.	Into capillaries of intestines.
			Protein.	Peptones.	
			Fats.	Emulsified and saponified.	Into lacteals.
Small intestine.	Intestinal glands.	Intestinal juice (succus enterieus).	Action similar to pancreatic juice, but weaker.		
Large intestine.	The process of digestion ceases with the small intestine, but the process of absorption, especially of water, continues in the large intestine.				

As the result of the processes of digestion and absorption which have been described, the blood *plasma* becomes rich in body-albumen, body-sugar, and body-fat. These substances are then carried in the blood stream into intimate contact with the different elements of which the organs and tissues of the body are composed.

Then occurs a stage of **assimilation** by the organs and tissues, which take up nourishment from the blood plasma, and convert it into part and parcel of the tissue, or use it up in force production, as, *e.g.*, in muscular exercise.

Excretory System.

The digestive fluids which have just been described are secretions, and it may be well here to pause and consider (1) what is a secretion, (2) what is an excretion.

(1) A *secretion* is the product of any gland which has yet its function to perform. (2) An *excretion* is the product of any gland which has already performed its duty, and it is therefore waste matter to be got rid of in various ways, viz. :

1. *By the Bowels.*—The waste and refuse of the digestive process, with other matters thrown into the intestines, are eliminated in this way.

2. *By the Kidneys.*—These are two small organs shaped like French beans, weighing from 4 to 5 ounces each, and situated in the loins ; ducts (the *ureters*) pass from them to the bladder. The kidneys are composed of an enormous number of small complicated tubes which lie amongst a mass of blood capillaries. *Impurities* can thus be readily abstracted from the blood by the kidney tubes. It should be noted that the kidneys resemble the lungs in containing innumerable blood capillaries, which afford a ready means of bringing the blood in contact, in the case of the kidneys with the kidney tubes, in the case of the lungs with the air-cells. The kidneys are thus constructed to remove various waste matters—*urea*, *uric acid*, etc.—from the blood, and to drain them off in solution along the ureters into the bladder. The fluid which is excreted by the kidneys is called the *urine*. The quantity of this which is produced daily amounts to about 50 ounces.

3. *By the skin*, which, as already stated, has sweat-glands. These also are part of the drainage system of the body excreting water, carbonic acid gas, and some urea.

4. *By the lungs*, which throw off carbonic acid gas and organic impurities by expiration.

Excretion is a very important function, and is as essential to the wholesome exercise of bodily function as free drainage is to the sanitary condition of a dwelling-house.

DUCTLESS GLANDS.

Whereas all the glands and organs that have previously been described in this book are supplied with tubes or ducts to carry off their products as secretions or excretions, there are certain glands or organs not so provided.

The principal of these are :

1. The *Spleen*, a soft organ about the size and shape of the kidney, placed in the abdomen above the left kidney. One of its functions is to make new white corpuscles and destroy worn-out old red corpuscles. Another and very important function of the spleen is its power of destroying the micro-organisms of infectious diseases and the poisons they produce.

2. *Lymphatic Glands.*—These are small bodies situated in various parts of the body, being especially numerous in the neck, thorax, abdomen, axilla, and groin. They make new white blood-corpuscles. They act as guards in the course of the lymphatic vessels to prevent the further absorption of poisonous materials.

3. *Thyroid Gland.*—This consists of two lobes or masses situated in the neck on either side of the larynx and trachea, and joined together by a narrow piece called the *isthmus*. Its function is still a matter of some obscurity, but one or both lobes are frequently found enlarged, as in goitre, etc. In Derbyshire and in the valleys of Switzerland people with enlarged thyroid glands are frequently seen. Absence or loss of function of the thyroid gland results in children in a disease called cretinism, and in adults in another disease called myxœdema. Overgrowth or oversecretion of the thyroid gland results in a condition called Graves' disease.

4. *The Adrenal Glands.*—These are bodies somewhat like

large beans, which lie close to the upper ends of the kidneys. They produce an internal secretion which leaves the glands by the blood stream, the function of which is to keep up muscle tone.

GENERAL OBSERVATIONS.

We have now dealt with the several systems of the body, and have observed how they act and react upon each other. The muscular system depends for its stimulation on the nervous system, which is the connecting link between all the systems of the body. Observe also how the other functions are dependent on each other. The organs of digestion and respiration supply nourishment to the circulation; the circulation distributes nourishment to all parts of the body; the hungry tissues feed upon this nourishment, and throw their refuse back into the circulation, and the circulation discharges its waste matter into the channels provided for draining it away.

It is necessary to make a few observations on such matters as the temperature and weight of the body, waste and repair, and sleep.

If you take the **temperature** of a healthy person by placing the thermometer in the armpit, it registers as nearly as possible 98·4° F. This is called the normal temperature, but it has variations in disease, and you will find in asylums that the average temperature is lower than this; though there are cases, as in general paralysis, after epileptic seizures, and in feverish conditions, where the temperature is above 98·4° F. It is a remarkable evidence of the perfect design and harmony of the human body and its vital processes that whether a man be asleep or waking, whether digesting or fasting, whether exercising or in repose, his temperature is always evenly balanced, and scarcely varies up or down. One principal reason of this, as has been already mentioned, is the regulating action of the skin and sweat-glands

Bodily heat chiefly results from the chemical changes taking place after the reception and digestion of certain foods—

principally fats and starches (see p. 33)—and though, as said, it is maintained at nearly the same point in health and in healthy circumstances, yet it can be lost by the lungs and skin faster than it is formed, under exposure to cold.

Sleep has been well described as 'closing for repairs.' While we are awake and active, repairs are going on; but the supply after a time falls short of the demand, and the body requires to lie up when night comes, so as to make good the deficiency in time for the next day's work. During sleep the bloodvessels in the brain contract, and are comparatively empty. Sleeplessness, on the other hand, principally depends on there being too much blood in the brain. The nerves which regulate the size of the bloodvessels from time to time, acting in harmony with all other nerve systems, ensure in a healthy person the proper amount of contraction. But these nerves (which are called *vaso-motor*, and belong to the sympathetic nerve system) are very liable to be irregular in action, and are, so to speak, much under the dominion of the various organs and systems of the body. The irregularity of action is principally in the direction of the vessels remaining open instead of contracting, or of remaining contracted for too short a period. As long as this is continued, sleep of a proper character is denied. Sleep is encouraged by exercise in the open air, by regular hours, quietness, calmness of mind, a cool, airy bedroom, a comfortable bed, etc.

Weight is an excellent index of bodily health, and is an exceedingly valuable means of ascertaining the condition of patients in asylums. A certain standard of height and weight is recognized by insurance companies as normal and healthy, but there are variations according to the particular constitution of the individual, and too much value must not be attached to these mechanical standards. It is of more importance to observe changes in the weight of the same individual; but it will also be found that a patient may vary several pounds in a year, losing and gaining by turns, without any serious impairment of health. Weight is an indication of how

the nourishment of the body is being maintained, and enables us to say whether wear and tear is in excess, or is being met by the digestion and assimilation of new material.

A man's body, then, is simply a bank account of loss and gain, of waste and repair. The more he takes out of himself, the less he has to spare, and the more he requires to make up. Every organ must have reasonable exercise, and waste and repair should balance each other. We are here again face to face with our duties to the insane; for many of them have overdrawn and are overdrawing their bank account, and we must try and recover the balance for them. A great deal lies in our power to remedy this state of matters. The risk of death from exhaustion is often great, and sound refreshing sleep and frequent meals are absolutely necessary to tide over the crisis. Here are placed side by side a scale of waste and a scale of repair, which should be carefully studied.

Causes, signs, or results of

WASTE.

Failure to take food.
,, to take proper food.
,, to absorb food.
,, to assimilate food.
Vomiting and diarrhœa.
Discharges from wounds, sores, or ulcers.
Loss of blood.
Wasting diseases, such as
Cancer,
Consumption,
Diabetes.
Excitement, if severe or prolonged.
Intense depression.
Loss of sleep.
Increase of temperature.
Loss of weight.
Loss of strength.
Pallor, thinness, and haggardness of face.
Skin unnaturally sweating or unnaturally hard and dry.
Etc.

Circumstances contributing to, and signs and results of

REPAIR.

Thorough and painless mastication and digestion of food.
Absence of diarrhœa, vomiting, and unnatural discharges.
Quiet habits of mind and body.
Cheerfulness, hopefulness, and sufficient refreshing sleep.
Normal temperature.
Increase of weight where it has fallen below normal.
Maintenance of weight at the normal point or a little above it.
Maintenance of strength in proportion to size and weight.
Healthy, well-nourished, and well-coloured appearance.
Moist and smooth skin.
Etc.

SECTION II

GENERAL HYGIENE AND CAUSATION OF DISEASE

THE maintenance of health depends upon the initial resistance of an individual and upon subsequent suitable environment, and among the factors composing the latter are a proper supply of wholesome food, good water, fresh air, and protection from weather. The elementary demands entail, in the case of collections of persons living close together, certain subsidiary requirements, such as personal cleanliness, removal of dirt and excreta, and the avoidance of disease-carrying infections. The general care of the body may be dealt with under the following heads:

FOOD-SUPPLY.

The various classes of food and their modes of digestion have been dealt with in Section 1 (p. 33), and the source and dietetic value of each must now be considered.

Proteins.—These bodies exist in large and complex molecules in various combinations in the bulk of animal and vegetable tissues. They all contain nitrogen, and are quite essential to life. Examples of the various groups are egg and serum albumen, globulins in blood and also in cereals and leguminous plants, and myosin in muscle, phospho-protein as caseinogen in milk and legumin in peas and beans, insoluble fibrin of blood and glutin of wheat, peptones in digested nitrogenous diet, albuminoses in vegetables, and albuminoids which swell and dissolve in hot water, such as gelatin. Peptones and albumoses are very easily absorbed by the lymphatics. Their chief function in nutrition is to carry oxygen, which they yield in the repair of tissue, recouping themselves from other proteids and carbohydrates.

Fats and *carbohydrates* (sugars and starches) are sources of energy and body-heat. The exact modes of action are unknown:

probably fats are formed from carbohydrates, and then burned directly to supply energy. The chief fats are olein, margarin and stearin from animals (fat and milk), but olive-oil is much used on the Continent, and other vegetable oils in margarin. Starches and sugars are changed by digestion into sugars of low complexity, such as glucose, which will pass through the lymphatic walls.

Salts and *water* are essential to life. They pass directly into the lymphatics. The chief inorganic essentials are phosphate of lime (for bone), phosphates and chlorides of soda (for body fluids), potash (for blood-cells and muscle) and magnesia, and the alkaline sulphates and salts of iron. They are derived mainly from fresh roast (not boiled) meat and vegetables. Many organic salts are also essential, such as tartrates, lactates, citrates, and acetates of the alkalies. They come from milk, fresh fruit, and green vegetables. Besides the above classes many condiments are in daily use, which vary the flavour and excite alimentary secretion; among them are pepper, mustard, ginger, pickles, tea, coffee, cocoa, alcohol in various form, and the essential oils of lemon, vanilla, and various fruits.

DIETARY REQUIREMENTS.

An average person should receive about $\frac{1}{100}$ of his body-weight of water-free food daily, and, as most foods consist of at least half water, a person of 150 pounds should consume about 3 pounds, as well as 4 to 5 pints of liquid. The proportions in a well-ordered dietary should average: Proteins 100, fats 65, carbohydrates 315, salts 23. In any case 15 parts by weight of carbon should be taken for every 1 part of nitrogen. Now we see the necessity for a mixed diet; for although most articles of food contain all the constituents, the proportions of these vary greatly, and, except in the case of milk, are nearly always wrong, which leads to waste of money and digestive energy. Thus, meat contains much proteid and too little carbohydrates, bread too little fat; potatoes are nearly all water and starch. Also meat loses at least 20 per cent. in bone, and 30 per cent. in cooking, whereas the loss on bread is less, and on potatoes very little. Again, animal proteids are more easily digested than vegetable, sugars than starches, and so on. Individuals vary greatly in their power of digesting various substances, as is well known in the ease with which beef is digested by most persons, and the difficulty others have in digesting veal. Vegetables contain a large amount of indigestible cellulose, which is, however, of use in increasing the bulk of fæces, and exposing the food in the intestine to the action of the intestinal juices. They also contain many of the salts required by the body, and fresh green vegetables should be included in every dietary, a fact sometimes lost sight of in asylums. Proper trituration by the teeth is most important, as giving the saliva time to act on the starches, which if passed into the stomach hinder the digestion of proteins, and also because

the more finely food is subdivided, the more easily is it acted upon by the digestive juices.

Illness may be caused by excess or deficiency of food or of its various constituents. If too much be eaten, all is not digested, and putrefaction in the intestine follows, with dyspepsia, flatulence, constipation, or diarrhœa. Purgatives and reduction of diet are of benefit. If the bulk taken be absorbed owing to vigorous digestion, congestion of liver, jaundice, a state of plethora, with torpor, headache, foul tongue, and fœtid breath, may arise. Free exercise may correct this. Continued excess of protein absorption may lead to kidney disease, and probably predisposes to gouty and rheumatic affections. On the other hand, there is reason to believe that a free proteid and fatty dietary to a certain extent protects against tuberculosis. Excess of starch may lead to fatness, or acid dyspepsia with anæmia. Deficiency of food, as seen in famines and the insane, produces wasting, loss of vigour, debility, with fever and dyspepsia. dry tongue, sordes on gums, and a distinct heavy, sweet fœtor of breath. Proteids and excess of fat will maintain health for a long time without carbohydrates, especially in severe cold and with much exercise. In fevers easily oxidized substances are required, and, as fat and starch digestion are in abeyance, dilute alcohol is often of use.

Milk.—For adults it is not a perfect food; one would, theoretically, require 7 pints a day, with excess of water and fat and deficiency of carbohydrates, in order to obtain sufficient proteids. Milk is very subject to putrefaction. Dirty milk more easily turns sour. On standing, the fat rises to the top, forming cream. Separated milk has had the fat rapidly removed by centrifugal action, much as seen in the hydro-extractors in laundries. When milk is boiled, the caseinogen is rendered very insoluble. Even sterilizing—*i.e.*, raising the temperature to 160° F.—injures it, but may be necessary in epidemics.

Butter.—In churning, the caseinogen capsules of the fat drops are ruptured, and the fat coheres. The curd should then be well washed out by working, and salt added. Butter is the most palatable and digestible means of obtaining fat. When it turns rancid, the fat decomposes, producing acrid compounds.

Condensed Milk loses digestibility by being evaporated down, and the added sugar makes it fattening, but too often most of the cream has been removed. It can in no sense replace fresh milk as a food, but is useful as a condiment.

Margarin is made from various animal and vegetable fats—lard, beef suet, mutton fat, cotton-seed and linseed oil, or cocoa butter. The fats are melted down and worked up with milk in cauldrons, and the fat crystallized by sudden plunging into ice-cold water. Provided the fats used are clean and fresh, margarin is a most wholesome and cheap article of diet, for the process of manufacture is scientific, and it is never touched by hand.

Cheese is made from milk coagulated by rennet and squeezed. As it ripens, the casein undergoes fatty changes. It is a very valuable article of food, but somewhat indigestible.

Tinned Meat is prepared by long, slow simmering in the tins, and sealing while hot. Consequently the fibre is soft, the gelatin well extracted, and all the juices preserved in a very digestible form. But it is somewhat tasteless, from the low temperature used in cooking it.

Beef-tea is made by extracting the juices of finely chopped meat at a temperature not exceeding 160° F. If it be boiled, the albumen is coagulated and lost in skimming, and most of the nutritive value disappears, leaving only the saline extractives. It is then a stimulating drink, but of low dietetic value.

WATER-SUPPLY AND BATHING.

Water is essential for all animal and vegetable life, and if civilized communities are to be maintained in health a free supply is required for drinking, cooking food, washing of persons, clothing, utensils, and houses, and for cleansing of sinks, water-closets, and sewers. The average amount allowed in towns varies from 20 to 50 gallons per head per day, but this includes a large proportion of persons who practically never bathe. In asylums it is found that an even larger quantity has to be given for various reasons.

VENTILATION AND WARMING.

Fresh air is of paramount importance to health. It consists of a mixture of about 21 parts of *oxygen* and 79 of *nitrogen*. The former is the vital component, the latter inert. Air also contains about 0·04 per cent. of carbonic acid, chiefly from the life-processes of plants and animals, as well as traces of *ammonia* and more or less watery vapour, the amount varying with temperature and atmospheric pressure, but averaging about 0·8 to 1 per cent. The composition of bodies of air is kept fairly uniform by *diffusion;* that in rooms and confined spaces quickly loses oxygen and gains *carbonic acid*, and is also fouled by suspended matters, dust, decomposing epithelium and sweat, cotton, wool, and wood fibres, mineral salts, excessive moisture, and multitudes of bacteria, some noxious, others inert. Hence the air of rooms requires constant changing, and the sick require more ventilation than the healthy.

Fires use up air rapidly, every pound of coal using 300 cubic feet of air. *Artificial lights*, other than electric, also use air, and one gas jet should be reckoned as equal to two persons. The air of rooms becomes offensive when the carbonic acid reaches 0·06 per cent., and to keep this down to the normal of 0·04 per cent., each person must have 3,000 cubic feet per hour. It must be noted that, although carbonic acid is used as the index of impurity, the real harm is done by the putrid organic particles. These can be detected by the smell when one comes from outside, but the nose speedily loses its delicacy of perception.

The larger a room the less is ventilation perceived if well carried out, for if air travels through at over 3½ feet per second a draught is felt. But since the inauguration of the outdoor treatment for phthisis many persons have become rapidly inured to cold; they even prefer it, and gain in health and appetite. In calculating ventilation requirements, each person should be allowed from 200 to 400 cubic feet, according to living conditions. As no height over 10 feet counts towards fresh air, this means 20 to 40 square feet of floor space. For asylums the English Lunacy Commissioners require 40 feet for day space and 50 feet dormitory floor space per head, and 63 feet for single rooms; together with one-third more than these amounts in infirmaries. Ventilation takes place (*a*) by diffusion, the gases tending quickly to mix; (*b*) by winds, acting either by *perflation* (blowing through) or by *suction*. The former is very potent, and upsets all natural schemes of ventilation. Suction causes a good deal of draught up a chimney, and also allows the nurse to close the windward windows of a ward and leave the leeward open, so that the foul air is sucked out. (*c*) By differences of temperature, warm air tends to escape from the upper part of a room, while cold air flows in below to take its place, so that cats and dogs prefer to lie on sofas and chairs. The rate of interchange between outside and inside air varies with the difference of temperature, and also with the dryness and barometric conditions. On bright, cold days rooms can be kept pure with few windows open; on damp, muggy days this is difficult with all open. The carbonic acid diffuses away easily enough, but the organic matter clings about on damp surfaces. In this climate heating is always combined with ventilation.

The modern tendency is to discard ventilating apparatus and trust to open windows at opposite sides of the room, combined with some method of warming. The usual methods of heating in asylums are—(*a*) *hot water in pipes*, flowing from the boiler-house; (*b*) the same pumped round under pressure; (*c*) *steam* carried in pipes; (*d*) water circulating in each block, warmed by a calorifier in the basement, supplied with steam from the central boilers; (*e*) *electric* radiators; (*f*) waste

steam from the engines sucked rapidly through pipes by fans, called the 'vacuum steam' method. Whatever method is used, the best radiator pipes are inserted in the currents of fresh air coming into the room through inlets, whether windows or special grids. This is necessary to prevent the air being used over and over again, and entails the radiators being placed against the walls. No doubt they are more efficient in the centre of the room, but the long flues cannot easily be cleaned. To assist warming and protect patients, the radiator-coils are covered. The most efficient way mechanically is to have them closed below and open above; but such are quickly fouled by dust and *débris*, and by patients leaning over them and spitting or coughing into them. So they become hot-beds of phthisis, and of late various glass-walled cupboards have been devised, with the outlets above the patients' heads, which can be opened and cleaned by the nurses at intervals. The disadvantage of these is that hot air ascends, and should, therefore, be admitted low in the room. Radiators tend to heat the air, and are not so pleasant as open fires, which heat the walls and furniture; but the latter are most wasteful, only 10 to 13 per cent. of the heat of the coal being used, while the rest is wasted up the chimney.

Nurses must constantly study the force and direction of the *wind* and the variations of outside and inside temperature, and maintain, as far as consistent with freshness, a uniform temperature of 50° to 55° F. in the wards, and about 5° F. higher in the infirmaries and sick-rooms. The great advantage of the suction afforded by opening the leeward windows and shutting the windward in strong winds, must not be neglected. Bright fires are to be maintained in cold weather, but damped down with wetted slack on warm days. Opening the windows at the top causes less draught than at the bottom, for the cold air blowing in mixes to a certain extent with the hot foul air at the ceiling. At intervals all doors and windows may be left open wide to allow of thorough perflation when the patients are out of the ward. Windows, even those in the

dormitories, should be left open all night except in severe frost or storms; for persons warmly covered in bed do not feel the cold, and quickly become inured to draughts. In the sick-room the light should be subdued, but cheerful. Sunshine should enter freely, but not be allowed to stream on the faces of those in bed. No more artificial light should be used than is necessary for proper nursing and supervision, and lights must often be screened to prevent the glare from falling directly into patients' eyes.

CLOTHING.

The original purposes of clothing were protection from cold, heat, rain, and wind, equalization of body-heat, and protection from injury. Adornment and show were ideas developed later. The usual materials used for clothing are *wool*, *cotton*, *silk*, and *linen;* to a less extent, *leather*, *fur*, and *india-rubber*. The different qualities of these depend chiefly upon their powers of absorbing water which may be taken into the fibre (hygroscopic) or lie between the fibres (interposed), and of conducting heat, which depends on the power of retaining air in the interspaces. Wool is at least twice as hygroscopic as cotton; silk and linen are inferior to both. Hence the value of dry woollen garments after exercise, to prevent the continued evaporation from the surface escaping into the air and causing a chill to the skin. Linen is coolest, allowing the sweat to pass freely through and be evaporated. Silk nearly resembles linen. Black, among *colours*, absorbs most heat, then blue, green, red, and yellow, white reflecting most, and being therefore coolest. This colour difference applies to the outside layer only, and the reputed advantage of red flannel underclothing is fallacious; in fact, coloured flannels should never be worn next the skin, owing to the possible presence of irritating dyes. With regard to distribution, the extremities need most protection, owing to the large ratio of skin to bulk permitting excessive heat radiation; next to

the extremities the kidneys need warmth. Desire for ease of movement has tended to the habitual chilling of the lower extremities in men and the upper in women. In both sexes the feet are often insufficiently protected, but it is not easy to devise a covering which is at once waterproof, light, warm, and capable of standing rough usage. Leather remains without a rival. No article of dress should be tight enough seriously to impede muscular movement, and the weight should be as small as possible, and depend from the shoulders. As regards night-clothes, cotton should be worn next the skin for cheapness and ease of washing, and sheets are necessary to protect the blankets from dirt.

EXERCISE.

Exercise is generally used in the restricted sense of action of the voluntary muscles. It is a necessity if health is to be preserved, but the greatest personal differences exist in the amount required, and also in the conditions under which different amounts are desirable. One of the most important results is quickening of lung-action, so that the absorption of oxygen and the elimination of carbonic acid are increased five times by walking at four miles an hour and at least seven times by trotting. If exercise becomes too severe the breathing becomes embarrassed, but is partly restored when the 'second wind' is gained, due to dilatation of systemic arteries. If palpitation arises, exercise must be stopped; it is apt to occur in those with rigid arteries, or those imperfectly trained. The action of the skin is greatly increased, and free sweating occurs, the elimination of water, salts, and fatty acids being much raised. If free evaporation be allowed, the temperature remains normal, but if it be prevented, a rise occurs and fatigue quickly follows. The voluntary muscles grow firmer and larger, and the intramuscular fat is absorbed. But there is a limit, and if exertion be too severe and prolonged, fatty degeneration of the fibres

may follow. The appetite is largely increased, and there is a call for proteins to help the increased oxidation going on, and also fats, but to a lesser degree carbohydrates, to be used as fuel. This effect is still further increased if exercise be taken in the open air, where carbonic acid is not in excess in the inhaled air, and evaporation is promoted by the lower amount of watery vapour than is present in expired air. The water of the urine is much lessened, the skin taking up this function of the kidneys. As a result, the urine is concentrated and deposits a cloud of urates on standing. The blood is deprived of water, and thirst created. But if this be resisted the desire soon passes off, and a better state of training results. Exercise must be carefully graduated to the strength of the individual. A gentle stroll for half an hour may be enough for a feeble case, while a strong man may work hard for ten hours a day, or a vigorous youth may cycle seventy miles. Deficiency of exercise results in liver congestion, headache, dyspepsia, constipation, fatty degeneration of muscles, and general obesity.

SECTION III

ACCIDENTS, EMERGENCIES, FIRST AID

In asylums, where there is always a medical officer at hand, it is the universal rule to report to him at once the occurrence of any accident or unusual incident, and it is of advantage to cultivate the habit of describing the event in a very few words, with an indication of the apparent degree of seriousness, together with the patient's name, in order that he may have some idea before reaching the ward what is required—whether instruments from the surgery, restoratives, splints, etc.

Patients meet with injuries chiefly—(1) *by accident;* (2) *by violence of others;* (3) *by suicidal attempts.*

I. ACCIDENTS.

Falls.—All patients, but especially old people, are liable to falls—it may be from slipping on a wet floor, or one which has been too highly polished, or upon which some greasy or slippery matter has been spilled or dropped, such as soup, gravy, potatoes, milk, orange-peel, soft-soap, or wax and turpentine. A common cause is a piece of carpet, mat, or hearthrug slipping away with the patient on a polished floor, and letting him down. Irregularity of the edges of floor-boards, a prominent knot in the wood, a displaced block in the floor, or the edge of a thick mat or step not properly countersunk, may cause such accident. He may stumble or trip through having ill-fitting boots, and women may catch the feet in a dress which is too long, or trip from stockings

trailing down over the feet. Old people, or those with heart- or kidney-disease, may faint or feel weak and fall when getting out of bed, or when rising from a seat, or may lose their balance when sitting down. Patients must never be allowed to jostle one another by crowding and pushing through doors, or when going up or down stairs, lest the feeble ones fall. Probably the commonest injury to bone resulting from a fall is a *fracture at the hip-joint*, and as it is of great importance that any *impaction* (p. 78) which may have occurred should not be disturbed, it is a good working rule for a nurse never to attempt to raise the patient, but to leave him exactly as he lies, merely protecting him from cold or from the jostling of other patients, until the medical officer arrives. If it is essential to move him, as from a narrow doorway, he should be grasped under the armpits behind and gently pulled along the floor, taking care that neither hip nor leg leaves the ground. No attempt must be made to lift him on to a chair or bed.

Epileptics are apt to fall in a fit against sharp edges of furniture or down a steep bank. One of the special points about the mental condition of epilepties is the disregard for the consequences of such falls; they often think they are sure not to have a fit in such a position. So it is necessary to use firmness and tact in not allowing them to stand on chairs, ladders, etc., since they are spirited and industrious, as a rule, and work is the best thing for them.

Excited patients are liable to accident from rushing impetuously about and slipping or tripping, or running up or down stairs, or climbing trees, walls, or roofs, and falling off. The nurse in pursuit requires to use much tact, and must endeavour to catch the patient while he is still in a position of safety; but if he has reached a dangerous spot, it is better to parley with him pending the arrival of the medical officer than to risk an accident by driving him to extremities. Severe falls are also apt to occur from excited patients rushing about on the wet floor of a bathroom.

Choking.—It cannot be too strongly insisted upon that many patients who appear to faint while at table are in reality choking. It appears as if the shock of finding the respiration obstructed causes the faint; so that it should be the universal rule to pass the finger across the back of the tongue and feel the epiglottis free in all cases of fainting, whether at table or not. It cannot do harm; it wastes no time, and it may save life. The classical form of choking—fierce struggling, with face livid—is not so common, although it does occur. Epileptics, general paralytics, imbeciles and senile patients, are especially apt to cram food in the mouth. The finger must be hooked round the obstruction, the mouth being forced and held open by a gag or key. An efficient gag can be made by wrapping a spoon in an apron or cloth. A sharp slap on the back may occasionally dislodge the object, or a finger in the back of the throat may cause vomiting. It must be remembered that soft pudding or porridge may choke a patient, especially if injudiciously pushed down with the finger or drawn into the lungs during a fit. If the epiglottis is felt to be free, and still air does not enter the chest, the patient should be inverted and the ribs squeezed sharply, thereby assisting the cause of the obstruction to fall out.

Burning or Scalding.—In certain wards of asylums fireplaces are provided with some form of guard. The locks, if there are any, require constant supervision, as the heat tries the metal severely. Epileptics and feeble people are apt to fall against the guards. While the guards are unlocked the fires must never be left unprotected for a moment, a nurse always being at the fireplace. Lighted coal must never be carried from one grate to another. As a general rule, patients must not be permitted to gain possession of *matches*. No lighting of pieces of paper should be allowed, but the attendant must strike a safety match on the box and return the latter to his pocket before handing the match to the patient to light his pipe. He must see that the match is not carelessly thrown down afterwards, especially

while alight. Patients are fond of stuffing rubbish — paper, greasy caps, or waxed polishing-rags—down behind heating coil-covers, and such have been the cause of fires even when the water in the radiators is far short of boiling temperatures. For safety, as well as for other sanitary reasons, coil-covers should be removed and thoroughly cleaned as frequently as may be necessary. The hot-water taps in scullery, slop-closet, lavatories, and bath-rooms may be a source of danger to certain patients, not only from suicidal attempts, but from accident. Patients, as a rule, must not be left alone in a bath-room while there is water in a bath, and the rules of the asylum in respect of the use of the bathroom and of bathers must be strictly observed.

Burns and scalds are generally divided into three degrees of severity : (1) When redness or blistering of the epidermis only is present ; (2) when after a day or two ulceration of the true skin occurs ; (3) when the subjacent structures are implicated, and more or less destruction of tissue is caused. Even burns of the first degree are dangerous if at all extensive, and especially so in the insane whose vital resistance is weakened. When the clothing catches fire, the patient should be at once rolled on the floor, as flames run up, especially in the case of women's clothing, with intense rapidity, and reach the exposed face. A woollen rug, blanket, or coat, if available, should be wrapped round him. A nurse must take care lest her own clothing catch fire. In scalds it is essential to remove the clothing instantly, for the heated water in the cloth increases the injury. In both burns and scalds remove the clothing and examine the extent of the injury ; but the clothing must never be dragged off, and, if adherent, must be left so, and merely cut round with scissors. The chief point in the immediate treatment is to exclude the air by covering the injured part, this being found to lessen pain and shock. If the skin is only red, and not broken, the part should be dusted with flour, zinc oxide, starch, whitening, chalk, baking soda, or any bland powder which is at hand ; then covered with cotton-

wool and bandage. If there is blistering or more severe injury, strips of lint about 6 inches wide should be soaked in a solution of picric acid, if at hand, or, failing that, in linseed, olive, or *Carron* oil (equal parts of lime-water and oil), or smeared with vaseline, cold cream, or any bland or antiseptic ointment handy, and laid over the wound. The changing of strips of lint causes less shock than exposing a large surface of injured skin to the air at once. The blisters must not be pricked. Then the part should be covered with cotton-wool and bandage. Carefully-cut masks of lint, with eye and nostril holes, must be applied if the face is burned, and some antiseptic powder blown into the ears. In like manner gloves may be applied to burned hands.

II. VIOLENCE OF OTHERS.

Asylum patients have access to so few weapons that their means of doing violence to others are almost limited to kicks and blows of the fist. But some articles which may be used for offensive purposes are bound to be in use in a ward. The field for a nurse's tact is large, in keeping excited patients apart, closely watching dangerous and suspicious cases and keeping them employed upon harmless tasks. Flower-pots, crockery, shoes with heels, and brooms, cannot be done without altogether. Such patients working or walking in the grounds are apt to secure nails, stay-busks, and old bits of iron which may be fashioned into dangerous weapons. But these cannot be ground to a point upon stonework or burnished on iron-work without attracting the attention of the watchful nurse. These patients must never be allowed to make the beds, lest they secrete articles in the bedding, and their clothing must be most carefully searched each evening after they are in bed, and in the morning the bedding, and especially the pillows and mattresses. Pokers, etc., must always be kept carefully locked up, and used only by the nurse. Brooms and cleaning materials must never be left about. The locks of towel-rollers

require constant watchfulness, as the roller is a very dangerous weapon. The stockings require careful looking after, for a stone in a stocking is a most fatal weapon.

III. SUICIDAL ATTEMPTS.

The methods by which the insane may attempt suicide are almost endless, and, in spite of every rule which can be devised and the exercise of the greatest care, new modifications are devised, and may be occasionally successful. Nevertheless, it must be realized that most suicides in asylums occur among those who are at the time, or have been in the past, recognized as suicidal, and could frequently have been prevented by proper watchfulness. The attempts may be grouped in several well-defined classes, and in ordinary cases the absolute and rigid observance of one main rule is necessary to secure a fair assurance of immunity, even when all dangerous articles and weapons are kept entirely out of the reach of suicidal patients. This rule is: *Never under any circumstances, by night or by day, whether in the day-room, dormitory, lavatory, bathroom, w.c., corridors, at meals, at associated entertainments, at church, or in the grounds, whether walking or working, allow any suicidal patient to be for a single second out of the actual sight of a nurse.* The chief methods by which suicide in an asylum may be attempted are the following:

1. **Precipitation.**—Every actively suicidal case should be accompanied up and down stairs by a nurse, in many cases actually holding his arm. But as far as possible suicidal patients are accommodated on the ground-floor, not only on account of the stairs, but to discount injury from springing through a window. In general with patients possibly suicidal, as with epileptics, the nurse should precede the patient coming downstairs, and follow him going up. Every day the window-locks, and also the wood fillets which keep the window-frames in place, should be examined; a patient may take days to prepare for an attempt, having, it may be, a minute or two

each day when want of supervision gives him a chance to tamper with locks or screws. Buttons are usually used as screwdrivers. Climbing trees and throwing themselves down constitutes an occasional method. A patient when really desperate may dislocate his neck by leaping into the air and performing a half-somersault, or even by throwing himself against stone curbs, walls or floors. If such a man is in the day-room, he should be seated as far from the windows and fireplace as possible, lest a sudden spring dislodge the nurse's hold and the patient get into danger.

2. **Strangulation and Suffocation.**—These may be accomplished by suspension, or by tying an article tightly round the neck, or by voluntarily pushing a substance into the windpipe. It is the most difficult of all methods to guard against without absolutely preventing work going on in the asylum, because so many materials may be used. Constant watchfulness is therefore essential. Strips torn from clothing, braid, hair-ribbon, garters, handkerchiefs, towels, binding from a mattress, or string used for sewing beds, all come in handy. All clothing must be searched and examined every night, and that not in use must be kept always in the storeroom, to which no suicidal patient is to have access at any time. All bedding must be searched each morning for signs of tearing. A suicidal patient must never be allowed to enter a nurse's room even when the nurse is present.

3. **Cutting or Stabbing.**—Knives with only a small cutting edge are in use in some asylum wards; and if such are supplied, great care is needed to see that no ordinary knives are brought into the ward. No carving-knives or forks are ever to be allowed out of the locked knife-box in a locked cupboard or storeroom except while actually retained in the nurse's hands, nor are they ever to be entrusted to a patient to clean, even if not suicidal himself, as a suicidal patient may snatch them from him. Every knife, fork, and spoon is to be systematically counted after each meal, and if one be missing, it is to be searched for until found, a report being at once

made, so that watch for it can be maintained throughout the asylum. Nurses must never use hatpins while on duty, and must keep them rigorously locked up in their own rooms. *Breaking glass tumblers*, etc., and secreting fragments for suicidal purposes, or trying to cut the throat on a broken pane, is often seen. Every minute piece must be collected from the floor, window frame, etc., and at once removed from the ward.

4. **Burning and Scalding.** — Most of the preventive methods against such occurrences have been mentioned already. Accidents have happened through a patient escaping from the dining-hall and finding an unprotected hot tap or fire in the hall, scullery, general kitchen, nurses' mess-room, or bake-house. All such doors must be kept shut and guarded by a nurse when patients are passing through the main corridors to meals.

5. **Drowning.**—Most drownings occur as a sequence to escapes, and ponds, canals, and rivers near an asylum are a source of much anxiety. Reservoirs in the grounds are provided with unclimbable fences, but a desperate patient can generally climb any fence yet made.

6. **Poisoning.**—In the majority of attempts the articles made use of are : (*a*) *Cleaning materials*, like soft soap, floor polish, turpentine, washing soda, polishing pastes. (*b*) *Surgical, medicinal, or disinfecting agents*, such as carbolic lotion, creolin, chloros, formalin, sublimate lotion, iodoform, mercurial ointment, liniments and medicines, and especially chloral draughts and sedative powders. Care must be taken that in using any of these the patient does not snatch the bottle and swallow its contents. The nurse must satisfy herself that the whole dose ordered has been disposed of, and that no part of a powder is held under the tongue and afterwards preserved by the patient. Doses of medicine must be carefully measured, and all bottles should be shaken before the dose is poured out, lest a poisonous sediment may have formed. Sedative powders can always be mixed with jam or treacle, but some, such as

sulphonal, are soluble in hot water, although not in cold. (*c*) *Articles for household cleaning* carelessly left about in the ward or nurse's room, such as salts of sorrel or lemon (oxalates of potash), bonnet acid, acid of sugar (oxalic acid), oil of vitriol (sulphuric acid), red nitre (nitric acid), paraffin, petrol, cyanide, salts of zinc, copper, etc. Needless to say, no such articles should ever be kept in any part of an asylum to which patients may by any chance have access. (*d*) *Leaves or berries* of plants, shrubs or trees growing in the grounds. Now, very many plants have poisonous properties, but unless a large quantity be taken the effect is not likely to be dangerous. Those which are more dangerous are, especially, yew, laburnum, some kinds of laurel, privet and holly, aconite (monkshood), belladonna (deadly nightshade), briony, digitalis (foxglove), hemlock, henbane (fool's parsley), and poisonous fungi (toadstools). Most cases of asylum poisoning from leaves or berries are really accidents caused by a craving for green food.

7. **Miscellaneous Methods adopted for Self-Injury.**—Swallowing stones and other articles, or pushing them into the rectum or vagina, wounding the gullet or privates with sharp sticks, pulling off the scrotum or dragging out uterus or rectum, are all recognized. Spoons, forks, or knives have been swallowed at table, the object being suicidal choking, but the result is generally septic poisoning from ulceration through œsophagus, stomach, or intestines. Patients sometimes try to get into machinery, especially in the laundry. Sometimes one finds a patient whose whole purpose is to push pins or needles into the thorax, neck, or abdomen. Luckily, anatomical ignorance safeguards life in most instances.

EMERGENCIES.

In spite of all care exercised to prevent them, misfortunes are bound to occur, and it is necessary to give a short description of what may be expected, and the usual treatment adopted without which the nurse is working in the dark,

and cannot possibly carry out intelligently the means adopted by the medical officer.

Hæmorrhage.—The immediate treatment of bleeding is very important, and any serious loss of blood must be reported at once. Hæmorrhage may be—(1) *Arterial*, where scarlet blood spurts from the cut artery in jets if it be superficial, but not in deeper wounds. The blood comes from the cut end nearer the heart. If a large artery is badly wounded, such as the aorta or carotid, death will be nearly instantaneous. A medium-sized vessel such as the thyroid in neck, the axillary, or the femoral, is fatal in a few minutes unless the flow is stopped. Even small vessels cause grave danger from shock, but prompt treatment averts death. (2) *Venous*, where dark blood from a vein wells up in an even flow from the cut end farther from the heart (p. 20). As a rule, a wound of a vein is much less dangerous than that of the corresponding artery, unless air is allowed to enter the vessel, when this may reach the lungs, block the capillaries, and cause death from suffocation (air embolism). (3) *Capillary*, from surface wounds. Bright blood wells up briskly from the whole extent of cut surface. It is not specially dangerous in itself.

The broad principles applicable to the treatment of *Arterial Hæmorrhage* are: (1) Apply pressure on the bleeding spot, either (*a*) digital, or (*b*) instrumental, by means of a small graduated pad or compress bandaged on. (2) If these are not successful, apply (*a*) digital pressure to the artery *nearer the heart than the wound*. This compression must always be between the fingers or against a bone; it is useless to push a vessel deeper into soft tissues without closing it. Or (*b*) a tourniquet round the limb at such a spot nearer the heart as will allow the strap of the tourniquet to squeeze the vessel against a bone. A screw tourniquet is not always at hand, and one can be devised on the spot from a folded towel or handkerchief or necktie. Place a small firm pad (a stone or small piece of wood or folded paper) over the artery, put a half-knot on the bandage

directly over the pad, put a stick against it and complete the reef-knot by two half-turns over the stick. Then twist the stick round and round until the bandage is tight and the bleeding ceases. The stick must now be locked, by again tying the ends of the bandage over it, or an elastic bandage, or even a rubber feeding-tube, may be used, especially if the limb be first elevated, so that the force of gravity is against the heart. (3) In the bend of a joint—knee, elbow, or arm-pit—a large firm pad with the limb tightly bandaged in the flexed position may command enough pressure. *The above are all the first-aid methods to be adopted by the nurse.*

Wounds of Special Arteries.—*Carotid:* If there is only a small punctured wound death may not occur at once. Digital pressure lower in the neck is required, the vessel being found along the front edge of the sterno-mastoid muscle and compressed against the cervical vertebræ. Relays of assistants are necessary, as one person's fingers quickly tire. Avoid pressing on the windpipe. Fainting is often caused by this compression, but this is rather an advantage than otherwise, unless continued long, as the heart is less vigorous and restlessness is stopped. *Thyroid:* In cut-throat, if death does not occur at once, we may assume that the carotid artery and jugular vein are intact, and either one of the superior thyroid arteries from the carotid, or of the inferior thyroid arteries from the subclavian, or else one of the thyroid veins, is the source of the bleeding. The bleeding spots must be controlled against the vertebræ. If the windpipe is opened, as nearly always occurs, the head should be kept much lower than the legs and body, to save blood being drawn into the lungs. A light antiseptic pad should be placed over the wound as soon as bleeding is controlled, for septic pneumonia is very apt to cause death in such cases. The bloody froth and mucus must be constantly wiped away with antiseptic pledgets of cotton-wool. *Forehead* or *Scalp* (temporal) is controlled by direct pressure on the bleeding spot. *Lingual*, at base of tongue, a difficult vessel to control, best effected by pressure between finger and thumb in mouth. *Facial*, in the cheek, by finger in mouth and thumb outside, or by pressure against lower jaw where it passes from neck to face. *Subclavian:* Bleeding from the armpit is difficult to stop, as there are several supplies. If the bleeding point cannot be controlled by the finger, or the axillary artery is wounded, the subclavian can be compressed against the first rib behind the clavicle. If owing to the strong neck fascia the pressure is not sufficient, the end of a key may be used. *Brachial:* This is an easy artery to reach at the inner edge of the biceps, and pressure here controls any wound below it, and serves for bleeding from forearm or elbow. In

grasping the biceps from behind, the fingers press the artery against the humerus. *Radial* and *Ulnar* may be pressed against the corresponding bones at the wrist. The radial is the familiar 'pulse.' In wounds of the hand or fingers pressure here may be of use. *Femoral:* If the wound is high in the thigh, the artery may be compressed against the brim of the pelvis in the femoral canal. Both thumbs are required to attain sufficient pressure, one above the other. If the wound is lower down, there is probably room for a tourniquet above it. In all wounds of the leg and foot, the limb must be raised and a tourniquet placed above the knee. On the leg or forearm, where there are two bones which protect the vessel from pressure, a tourniquet is useless. It *must* be applied to the thigh or arm respectively. If a wound of the trunk causes collapse, there is probably internal bleeding. The nurse can do nothing except keep the patient quiet. It is inadvisable to apply heat or give stimulants, for the weakened heart-beat is nature's remedy against excessive loss of blood.

Venous Hæmorrhage.—The patient should be laid down and the limb elevated; the bleeding spot being uncovered, bleeding is controlled by finger pressure. The commonest form of venous bleeding is the bursting of a varicose vein or ulcer of leg. It is often fatal if left alone, yet nothing is easier than to stop it, mere elevation of the limb being often sufficient, and finger pressure always effectual.

Capillary Hæmorrhage is rarely dangerous. Very hot and very cold water applied alternately will promote clotting, but the water must be allowed to trickle on in a gentle stream. Rubbing or hard mopping washes away the clots. An antiseptic gauze pad and firm bandage are also effectual; styptics should be used sparingly, and only by the medical officer, as they make a large, messy clot which may suppurate.

Shock, Fainting, Fits.—A patient may be seen to fall to the ground or may be found lying there. He may be conscious, confused, or unconscious. He may be pallid and pulseless, or flushed with full pulse; he may be breathing heavily or apparently not at all. He may be quite still, or restless, or convulsed. At first sight it is not easy to tell what is wrong, still less what to do. But a glance will reveal much. If he is breathing freely, there is evidently no dangerous obstruction to respiration. If his pulse is good and regular, he will

probably not die immediately from want of help from a nurse. If there is obvious bleeding, or signs of burning about the mouth from poisons, the indications are equally obvious. But if none of the above give any information, then the nurse should leave the patient alone, lying where he is, until the medical officer arrives. Interference can do no good, and in at least one case—viz., cerebral hæmorrhage—the result of lifting him on to a sofa may be fatal. If the patient is conscious he may be able to tell what is wrong, and if he has pain in the buttock or thigh his femur may be fractured, and it is equally important not to move him. But supposing the patient 'appears' unconscious, the condition present may be any of the following:

1. *Faint.*—The heart is weakened temporarily to such an extent that the brain-circulation partly fails, and the patient falls, with or without warning. The causes are numerous, but generally reflex, such as bad news, fear, sights or sounds, tight clothing, indigestion, anæmia, hot rooms, unpleasant smells. Sometimes it occurs in heart-disease, and may then be serious. The treatment is to remove the cause if possible, undo all tight bands to clothing, collars, stays, braces, etc., and invert the patient; afterwards smelling salts or stimulants complete the cure. Often the prone position after falling is sufficient to restore consciousness.

2. *Shock*, or collapse, occurs from loss of blood or severe nerve injury, as after a bad accident. This is the condition usually assumed when death approaches from most diseases. The vital forces are at a low ebb, but acting. The heart is weak, face pale, skin often clammy and sweating, pulse feeble, but generally regular, sometimes flickering, or not to be felt. Respiration is shallow and hurried, but regular generally, interrupted by sighs and fuller breaths at intervals. There may be gasping or yawning. The patient is perfectly conscious, but difficult to rouse. The external avenues of attention are partly closed. He pays no attention to those around him, is listless, placid, and feels no pain as a rule. If roused up he

can tell all that is going on, but the memory is confused and defective owing to lack of attention. The condition is very grave, and if nothing to cause it is to be found, the patient is probably dying from internal hæmorrhage. The only thing the nurse can do is to apply warmth and stimulants.

3. *Hysteria.*—Hysterical subjects often have an attack while feeling faint, so that there may be pallor. But the pulse is generally regular, and it is easily perceived that unconsciousness is only assumed. A further account of this disease will be found on a later page.

4. *Concussion.*—This is an abolition of consciousness from a severe blow, direct or indirect, causing jarring to the brain. There is a certain amount of heart-weakness—sometimes extreme—feeble pulse, shallow respiration, pupils generally dilated and immobile, but equal. As in shock, the skin may be clammy and sweating.

5. *Apoplexy.*—This is a state of unconsciousness caused by sudden interference with the blood-supply of the brain. A description will be found on a later page.

6. *Convulsions.*—These occur in many conditions, in *teething* children, *rabies* (*hydrophobia*), *tetanus* (*lockjaw*), *strychnine* and other poisons, *epilepsy*, *general paralysis*, and in any sudden *disturbance of the brain circulation*, such as *embolism*, *thrombosis*, *hæmorrhage;* also in brain *tumour* and *abscess.* We need not further mention most of these here. In a known epileptic fits cause no surprise, and are either *petit mal* or *haut mal.* In the latter the usual sequence of stages occurs: (*a*) Sudden and complete unconsciousness; (*b*) tonic spasm; (*c*) clonic spasm; (*d*) exhaustion, coma, and gradual recovery. The treatment is to lay the patient on the floor with a pillow under the head, loosen all tight bands, and prevent him from injuring himself while the fit lasts, or from suffocating by turning on his face before recovering consciousness. In all patients other than epileptics a fit is of grave import. Epileptiform convulsions occur in general paralysis; they are exactly similar to apoplectiform seizures, except that the sensori-motor regions of

the brain are affected, while in the apoplectiform they are not.

Steps to be taken in the above Conditions.—Although a nurse may not be able to recognize completely with which of the above sudden illnesses she has to deal, still she may gain much information, and assist the medical officer when he comes, by following a routine examination in all cases which are not at first sight evident. The nurse must: (1) Lay the patient on the back; (2) open the mouth and pass the finger to the back of the tongue to feel for a foreign body; (3) undo all tight bands round neck, shoulders, and waist; (4) let plenty of fresh air have access to the patient; (5) note if respiration is free and regular, and if air is entering the lungs (if not, there is indrawing of the intercostal spaces with inspiration), and if stertor is present; (6) feel the pulse, and note if it is regular, intermittent, or absent, feeble, normal or full, frequent or infrequent; (7) note if the face is pale or flushed, and if the skin of the chest is warm or cold, dry, clammy or sweating; (8) examine the pupils, and note whether they are equal or unequal, contracted or dilated, and whether they react to light, also whether the conjunctival reflex is present; (9) examine the scalp and back of head for signs of injury, and note if there is bleeding from any of the orifices; (10) examine the large joints for displacements, and each of the four limbs, and also the neck, for any undue rigidity or flaccidity; (11) cover the patient and keep him warm until the arrival of the medical officer.

Poisoning.—In all cases send for the medical officer at once, and if the patient admits what he has swallowed, include this information in the message. Then send a nurse for the stomach-tube and funnel, gag, some large basins, and jugs of hot and cold water. In nearly all cases washing out the stomach does good, and every moment is precious. If there are no stains about the mouth, give an emetic of salt and water or mustard and water—a large tablespoonful to the pint. If there are signs of burning, do not give an emetic, but substi-

tute milk, egg, or olive or linseed oil. If the patient is drowsy, keep him roused, if possible. If there is no evidence of poison, and the patient is unconscious, leave him undisturbed; but meanwhile try to gain information from others as to what has happened, in order that the time of the medical officer may be saved when he arrives. The smell of the breath or vomit, or the finding of a bottle, may give an important clue.

Poisons are generally divided into *irritants* and *narcotics*. Many act in both ways, according to dosage or concentration, and many drugs have special physiological actions which bring them into neither group, and which lie beyond the nurse's province.

Irritants.—(*a*) Strong *mineral acids* like *sulphuric* (vitriol), *hydrochloric* (*muriatic acid*, *spirits of salt*), *nitric* (*aqua fortis*). (*b*) Strong *alkalis* like *caustic soda*, *caustic potash*, *ammonia*, *quicklime*. Acids and alkalis neutralize one another—acids by such harmless alkaline compounds as slaked lime, plaster, chalk, magnesia, bicarbonate of soda (baking soda), carbonate of soda (washing soda), or even hard soap (oleate of soda) or soft soap (oleate of potash). These may be given shaken up in water, and alkalis by such harmless acids as vinegar or lemon-juice. Strong acids and alkalis are *corrosives*, and leave white, black, brown, or yellow marks about the mouth; acids also stain coloured cloths red. The symptoms are burning pains about mouth, throat, and stomach, coming on immediately, followed by vomiting, then by shock and collapse. (*c*) *Oxalic acid* and its salts (salts of lemon and sorrel) and carbolic acid are corrosive irritants when strong, but in dilution act as narcotics, causing unconsciousness and rapid failure of the heart. *Carbolic*, *creolin*, *formalin*, floor polish, and many such substances, disclose their presence by their particular odour. *Strychnine* and many alkaloids act as *convulsants* by irritation of the spinal centres. *Yew and laburnum* cause violent pains, vomiting, diarrhœa, convulsions, and collapse. *Arsenic*, *antimony*, and *mercury* salts cause the same irritation without convulsions. The pain comes on rather later, and diarrhœa is incessant, death resulting, as in all this class, from shock. The treatment from which most good can be expected is washing out the stomach, the administration of bland oils, and combating collapse by warmth and stimulants.

Narcotics.—*Morphine* and all preparations of *opium* (*laudanum*, *paregoric*), *chloroform*, *ether*, *alcohol* in excess, *chlorodyne*, *prussic acid*, *chloral hydrate*, *veronal*, *sulphonal*, *paraldehyde* and all sleeping draughts, *belladonna*, *atropine*, *digitalis*, *hyoscyamus*, and other drugs given medicinally in small doses. Some of these affect the pupils: atropine dilates, morphine contracts. A good many plants come under this class. In all cases of narcotic poisoning there is gradually increasing unconsciousness, passing into

stupor, *coma*, with *stertor*, and death through paralysis of respiration or heart. The nurse can do little in these cases. The best hope is that a nurse was actually on the spot at the time and can make the patient vomit within a minute. In the case of prussic acid and its salts (cyanide of potash, etc.) heart failure is very rapid, and if the patient survives the first minute he stands a good chance of recovery. Morphine affects the respiration mainly, and strong coffee, walking up and down for hours, and artificial respiration are often effectual; but chloral is a strong heart depressant, and such vigorous methods would only cause death. There can be no harm, however, in applying warmth and performing artificial respiration.

ARTIFICIAL RESPIRATION.

If the patient is choking, it is first necessary to clear the throat. The mouth must be forced open by a gag or key, and the finger put far back at the side, the tip being passed across the epiglottis and hooking out any foreign body. As things generally pass into the larynx, pushing down makes matters worse. The presence of the finger may induce coughing or vomiting, which may expel the cause of the obstruction. If the patient is found hanging, the body should not be pulled down, but the weight raised from the rope, which should then be cut, care being taken that it is loosened round the neck. If a patient is rescued from drowning, he should be held, if possible, upside down by the ankles, so as to let the water run out of the lungs, or he should be turned face downwards on the floor, with a thick pad below the chest, and the forehead resting on his own bent arm. Then the lower ribs should be pressed behind and three counted slowly; then the patient should be turned on the right side and three again counted slowly. This is to be repeated as long as water or froth comes from the mouth. Meanwhile another nurse should prepare hot bottles and blankets, stimulants, ammonia, etc. If artificial respiration is to go on for long, the patient must be covered up as much as possible, to save collapse and conserve body heat. There are several methods of performing artificial respiration, which are best described by clear directions.

1. **Sylvester's.**—The nurse should lay the patient on the back; remove the clothing to the waist; place a pad or cushion under the shoulder-blades; draw the tongue forward by grasping it with tongue forceps or a towel, and keep it there by a tape passed over it as far back at the angles of the mouth as possible, and held there; induce inspiration by grasping the patient's forearms, and pulling them up and out to back of head and down to the floor while counting a slow four; this movement pulls the ribs up and air enters the chest; induce expiration by bringing the arms back and down to the sides; with the flexed forearms across the chest, firmly compress the ribs — all this while counting a slow four; repeat these movements fifteen times per minute.

2. **Howard's.** — This is especially useful when an arm is broken. The nurse must deal with the tongue as in Sylvester's method; place a roll of clothing under the body, so as to raise the abdomen above the head; sit astride the patient's hips, with hands on pit of the stomach and fingers on lower ribs; throw body weight on to his or her hands and squeeze lower ribs inwards and upwards while counting a slow four; then spring up suddenly and count a slow four; repeat fifteen times per minute.

3. **Laborde's.**—Useful if ribs are broken. The nurse must place the patient on his back; seize the tongue and pull it forwards fairly vigorously; count a slow four; let the tongue fall back; count a slow four; repeat these movements fifteen times per minute.

In all methods of artificial respiration the nurse should persevere for at least two hours, and watch the patient for signs of collapse for at least two hours longer; when spontaneous breathing is resumed, stimulate it by alternate douches of hot and cold water over the chest, by holding ammonia or smelling salts to the nostrils, or by inhalation of oxygen; next stimulate the circulation by rubbing the trunk and extremities vigorously with hot towels; when the patient is back in bed, avert collapse by warm blankets and hot bottles, and by hot stimulants, tea or coffee, as soon as he can swallow.

CARRYING PATIENTS.

A patient may be carried by one, two, three, or four nurses. The most generally convenient is by means of two, and there are several ways of doing this :

1. When the patient is able-bodied, except for, say, an injured leg, the two nurses grasp each his own right wrist with the left hand, and with the right hand the left wrist of the other. The patient sits on the chair thus formed and clasps an arm round the shoulders of each.

2. When the patient is more helpless, a nurse stands at each side of him and passes the forward hand under his thighs near the buttocks, clasping each the wrist of the other. The backward hands are similarly clasped behind the patient's shoulders, thus forming a back-rest.

3. When a patient is unconscious, one nurse stands at his head and passes both arms under the patient's armpits, locking his hands in front of the patient's chest. The other nurse, standing at the patient's feet, grasps the legs just above the knee between his own arms and body, and locks his hands in front of his body under the patient's knees. The patient is thus carried feet foremost.

4. If a stretcher is available, the two nurses, having placed the stretcher in a line with the patient's body, its foot close above the patient's head, straddle across the patient, each passing his arms under the patient, and locking the hands, the one under his back close to the armpit, the other under his legs just above the knee. They then raise the patient just sufficiently to clear the stretcher and slowly advance him on to it, one moving with short steps, while the other reaches forward by bending his body, and so alternately until the patient is over the stretcher, when he may be lowered and strapped on. If a third nurse is present, the two nurses simply lift the patient as above, while the other pushes the stretcher under the patient. In carrying the stretcher the nurses must take short steps, with bent knees, not springing from the toes, and not keeping step, the object being to avoid swinging the stretcher.

IN CASE OF FIRE.

Fires in asylums generally break out from two to four hours after a room has been vacated, and it is most important that day nurses should not go off duty and leave day-room fires roaring up the chimney. In addition to fires, the chief night nurse must be on the look-out for leaking taps and lights improperly left burning. Clothes-stores are especially dangerous places. Fires have been caused as follows: Patients lighting paper at fires for pipes, and throwing it carelessly down, especially behind articles of furniture or coil-covers; patients leaving smouldering tobacco in pipes in their pockets on going to bed; throwing old caps or greasy rags, especially floor-polishing cloths, behind coil-covers, where they have

caught fire by spontaneous combustion, even where the water in the radiators was much below boiling temperature; nurses carrying live coals in a shovel, or leaving hot cinders in a bucket unquenched; drying clothes in the ward where they had been washed, contrary to orders, and especially leaving them hanging before the fire on going to bed; throwing methylated spirits, turpentine, or paraffin on a fire to make it burn up better; warming floor-polish on the hearth to soften it. Pitch-pine floors and dadoes are most inflammable, so it is important to remember that incessant vigilance and supervision are required to prevent small fires, and that most large fires were for one time, possibly for hours, small enough to be extinguished by a few buckets of water or an extincteur. It is not possible to give any general directions, for every asylum has its own rules. If a fire occurs in a ward, some nurses must be told off to remove the patients to another block, counting them out by a door or staircase away from the fire, while others attend to extinguishing the blaze. But if a fire occurs at night the question is very complicated. First, every dormitory and single-room door should be opened, enough lights to see by should be lit, and the patients cleared away from the fire, the able-bodied being allowed to take care of themselves, the nurses assisting the feeble ones. It must be remembered that many will resent being roused and fight to get back, and that it is very difficult to count patients in the dark.

SECTION IV

GENERAL SYMPTOMATOLOGY OF BODILY DISEASES, WITH A BRIEF DESCRIPTION OF THE COMMONER DISEASES OF EACH SYSTEM

THE object of this section is, first, to describe certain general symptoms of disease and to explain their meaning; and, secondly, to discuss briefly the commoner forms of disease affecting the different bodily systems.

GENERAL SYMPTOMS OF DISEASE.

Before describing the special symptoms of disease of the different systems, it will be well to briefly mention a few general symptoms of disease which are very commonly present.

Fever (Pyrexia).—A rise of temperature is a very common symptom in connection with disease, and is accompanied by derangement of the functions of the body attributable to the febrile condition itself. Speaking generally, the severity of an acute disease may be gauged by the amount of the fever.

In every attack of fever there are three well-marked stages: (1) The *invasion;* (2) the *acme*, or height of the fever; and (3) the *decline.* In addition there may be an incubation period (see chapter on Specific Fevers).

The invasion may be sudden or gradual; if sudden, it is often accompanied by a *rigor* (see below). The decline usually

corresponds in character with the invasion, and may be sudden (*crisis*) or gradual (*lysis*). During the acme of the fever the temperature may rise to 102° F., when it is spoken of as *moderate* fever; from 102° to 104° F. it is known as *high* fever; and above 105° F. it is called *hyperpyrexia*, and is very dangerous to life. During the fever the frequency of the pulse and respiration increases, and, as a rule, the higher the temperature the greater the increase. The *tongue* is more or less furred, and may become dry and brown. There is almost always *thirst* and *loss of appetite*. The *bowels* are usually confined, and the *urine* is diminished in quantity and it is high in colour. The *skin* is, as a rule, dry and burning. *Headache* is common, and there may be *delirium*, especially if the temperature is very high.

Shivering Fit (Rigor).—Many febrile conditions are ushered in by a shivering fit, or rigor, and this is especially the case with some of the acute specific fevers and pneumonia. Rigors also occur with acute suppuration (abscess) and in ague. A well-marked rigor commences with a sensation of cold, especially down the spine, and is often accompanied with much depression and anxiety, the face looks pinched and blue, and the teeth chatter. This constitutes the *cold stage* of the rigor. If the temperature be taken in the mouth or rectum during this stage, it will be found to be considerably above normal. After some minutes the cold stage is succeeded by flushing of the face and general dilatation of the bloodvessels of the skin, and the patient then complains of feeling very hot. This constitutes the *second* or *hot stage*. Gradually the skin becomes moist, profuse perspiration sets in, and the temperature becomes lower. In half an hour or so the sweating ceases and the rigor ends; it often leaves the patient much exhausted.

Thirst.—Thirst is usually present in all conditions in which the temperature is raised above normal, or when much fluid has been abstracted from the system; it is therefore a constant symptom after severe hæmorrhage, in diarrhœa, and in

diabetes. It also occurs in certain gastric disorders. The sensation is referred to the back of the throat, but is really caused by a deficiency of water in the blood. Thirst is best relieved by mild acid drinks, such as lemon and water.

Wasting.—Wasting may be due (1) to errors in diet—*i.e.*, the food may be defective in quality or deficient in quantity; (2) to derangement of the processes of digestion and assimilation; or (3) to excessive wear and tear of the body structure. It is constantly present in febrile diseases, and especially in phthisis, in cases of prolonged vomiting or diarrhœa, and in diabetes. Amongst the insane it is a marked symptom in excited and restless patients and in those who refuse their food, as well as in cases of general paralysis; when it occurs without obvious reason it is often due to early phthisis, and this is especially the case in patients suffering from chronic melancholia, dementia, or imbecility.

Vomiting.—This is usually a symptom of gastro-intestinal disorder, but it also occurs in various nervous diseases, such as cerebral tumour, etc. The vomiting which is associated with sea-sickness, or which is caused by some horrible sight or offensive smell, is cerebral in origin. In vomiting due to nervous disease, nausea is, as a rule, absent, and this helps to distinguish it from vomiting due to gastro-intestinal disorder.

Vomiting is again referred to under Diseases of the Digestive System and The Specific Fevers, as well as in the chapter on Sick-Nursing, p. 135.

Fainting (Syncope).—Fainting is caused by any condition which interferes with the action of the heart.

It may be due to any of the following:

(*a*) Heart disease.
(*b*) Loss of blood and anæmia
(*c*) Hunger and exhaustion
(*d*) Fright or shock.
(*e*) Excessive heat and foul air.
(*f*) Certain poisons, such as tobacco.

In fainting the patient has a sensation of giddiness or sinking, the face becomes pale and clammy, the lips blue, the pulse is imperceptible or very feeble, the respiration is shallow and irregular, the vision becomes blurred, and the patient loses consciousness. The attack may last for a few moments up to some hours, and may terminate in death. The gravity of the condition depends largely on the cause.

The management of fainting is dealt with on p. 63.

Pain.—This is a purely subjective symptom, and it is necessary to be careful in forming an opinion as to its severity, etc., simply from the patient's description. Some patients are much more sensitive to pain than others, and even when very severe, it may not be complained of by patients suffering from such a condition as dementia. On the other hand, nervous, hysterical patients will often make a great fuss over quite a trifling pain. In judging of the importance, therefore, of pain as a symptom, the nurse must take into consideration the mental condition of the patient. The chief points to be noticed with regard to pain are:

1. *Its Situation*—whether moving about or fixed in one spot. It does not necessarily follow that the place where the pain is felt is the seat of the disease, and an example of this is that the pain of hip disease is often first felt in the knee.

2. *Its Character*—whether cutting, as in pleurisy; darting, as in neuralgia; or gnawing, as in rheumatism. It is usually best to let the patient describe it in his own words, and not suggest terms.

3. *Its Intensity.*—The nurse can form a good opinion of this by watching the patient.

4. *How Intensified.*—Certain actions are apt to make the pain worse, such as coughing in pleurisy, movement in rheumatism, swallowing food in gastric ulcer, etc. On the other hand, certain actions relieve the pain, such as pressing on the abdomen in colic. These actions must be carefully observed.

It is necessary to remember that pain is often the starting-point of delusions.

DISEASES OF SKIN, MUSCLES, BONES, AND JOINTS.

The Skin is subject to a large number of diseases, many of which are infectious. In addition, it may show important changes in the course of diseases affecting the body generally; for instance, the rashes of different specific fevers.

The commonest forms of *non-infectious* skin diseases are eczema, urticaria, and acne.

Eczema is an acute or chronic inflammation of the skin, characterized by more or less soreness and itching. The skin may be dry and scaly, or there may be profuse discharge of serum. Any form of irritation, whether in the blood or from without, may cause it. Thus, patients whose skin is allowed to remain in contact with urine are especially prone to eczema about the back and buttocks.

In *Urticaria*, or nettle rash, the skin is red and raised in wheals; the condition is often set up by some gastric disorder, or by some particular article of diet, such as shell-fish. The use of certain drugs is also apt to produce rashes.

Acne is an inflammatory disease of the skin which commences round the sebaceous glands. The duct of the gland first becomes blocked up, and the dirt collecting on this forms a small black point, commonly known as a 'blackhead.' This causes irritation, and a red, painful papule forms round it, which soon becomes a pustule; this eventually discharges a small amount of pus, and heals, leaving a little scar. Acne is most common in young people. The papules usually occur in crops, and the disease may last with varying severity for several years. The parts most affected are the face, especially the chin and the forehead, and the back. Patients who regularly take bromide of potassium are particularly liable to develop the disease, and this explains why epileptics so commonly suffer from it. As preventative treatment the skin should be well scrubbed with a flannel and hot water and soap daily.

Among the commoner *infectious* skin diseases are scabies, ringworm, and that produced by the body louse.

In *Scabies* the parasite burrows under the skin, especially between the fingers and on the wrists, and causes intense itching, so that the patient is constantly scratching himself; the dirt thus introduced produces a rash on the arms and body, somewhat resembling eczema.

Ringworm is especially prone to attack the scalp in children, producing rounded bald patches presenting a few broken hairs. It is commonly spread by children wearing each other's hats.

The irritation caused by the *Body Louse* gives rise to scratching and the production of a rash-like eczema, often widely spread over the body. The louse lives in the clothes, and will not be seen on the body.

Another variety of louse inhabits the head, and causes great irritation of the scalp. The eggs, or nits, are attached to the hairs by a firm, cement-like substance, and are very difficult to remove.

The rashes of the specific fevers will be described under their respective headings.

A *Boil* is a localized inflammation of the skin and subcutaneous tissue. It commences as a small red pimple in connexion with a hair. There is considerable exudation of serum into the surrounding parts, and eventually a vesicle forms, which bursts and discharges pus. After a time a small slough separates, and the boil then heals. Boils rarely occur singly, and usually one follows another for several weeks. The pus from boils contains a micro-organism, and hence care should be taken that the patient does not inoculate himself with it, and nurses should also be careful of their hands.

A *Carbuncle* differs from a boil in the dusky red colour of the skin over it, in the large amount of slough it contains in proportion to the small amount of pus, in having numerous openings on the surface, and in its tendency to spread.

Insane Ear.—Reference may here be made to the 'insane ear' (*hæmatoma auris*). This is a swelling which appears on the outer ear, due to effusion of blood or bloody fluid among the cartilages of the ear. It may become as large as a hen's egg, and is at first of a red or livid hue. If left to itself the swelling subsides after a time, but leaves the ear irregularly thickened, puckered, and much deformed. The condition is seen most frequently in general paralytics, epileptics, and cases of severe and long-continued excitement. The exciting cause is, frequently, some violence to the ear, as from the patient rubbing his head on the pillow in his restlessness, or from a blow; but apparently it may also arise spontaneously. It is important to observe it early, as by prompt blistering much of the deformity of the ear may be prevented.

Muscles and Tendons.—The commonest disease of the muscles is muscular rheumatism, of which lumbago is a good example. It is characterized by continuous, dull, aching pain, much increased by movement. Over-stretching of either muscle or tendon may produce strain, or even rupture.

Bones.—Bones are subject to a variety of diseases, of which one only calls for mention here—namely, tubercular disease. The symptoms of this are pain, swelling, and eventually the formation of an abscess. It is rarely associated with tuberculosis of the lungs or of the other organs.

Fractures of bone are of the greatest importance. They may be caused by—(*a*) Direct violence, in which case the bone is broken at the spot where the force is applied; (*b*) indirect violence, in which the bone is broken by force or leverage applied some distance from the seat of injury; (*c*) muscular action, in which the sudden violent contraction of a muscle snaps the bone to which it is attached.

Fracture may be—(1) *Simple*, when the overlying skin is unbroken; (2) *compound*, when a wound of the skin leads down to the broken ends of the bone; (3) *complicated*, when important surrounding structures, *e.g.*, nerves, joints, etc., are injured as well as the bone; (4) *comminuted*, when the bone is

splintered into fragments; (5) *impacted*, when the broken ends of the bone are driven into each other; (6) *greenstick*, found especially in children, when one side only of the bone is broken.

The *symptoms* of fracture are: (*a*) Loss of power; (*b*) pain; (*c*) deformity; (*d*) shortening in the case of long bones; (*e*) swelling; (*f*) irregularity; (*g*) unnatural mobility, except with impacted fracture; (*h*) crepitus, or grating of the broken ends together (not always present if the broken ends are much displaced).

Amongst the insane, those most liable to fracture are the aged and feeble, epileptics, and general paralytics. The commonest seats of fracture are the lower end of the radius, the neck of the femur, and the ribs. Fracture of the lower end of the radius is known as Colles's fracture, and is generally caused by a fall on the outstretched hand; the resulting deformity of the wrist is quite characteristic.

Fracture of the neck of the femur is apt to occur in old people from falls, often trifling in character. There is loss of power in the limb, which lies on its outer side, and shortening, if any, is slight. The ribs are very liable to be broken in struggles with patients, and it is hardly necessary to add that kneeling on a patient is attended by the greatest risk to these bones. The chief symptoms are pain increased by breathing or coughing and shortness of breath. If the lung be wounded by the broken bone the patient will spit blood.

Joints—*Dislocations.*—A dislocation is a displacement of one or more of the bones at a joint. The commonest joints to be injured are the shoulder, elbow, thumb, fingers, and lower jaw. The symptoms are: (1) Pain; (2) swelling; (3) deformity; (4) unnatural position of the limb; (5) alteration of the length of the limb, lengthening or shortening; (6) fixity of the joint.

Joints are especially prone to tubercular disease, and are also commonly affected by rheumatism and gout.

DISEASES OF THE CIRCULATORY SYSTEM.

Diseases of the Arteries.—The arteries in health are elastic tubes which accommodate themselves to the quantity of blood passing through them, so that they are always kept full. The chief disease affecting them is called *atheroma*. This is a chronic degeneration of the vessel wall, the artery becoming hard and brittle and losing elasticity. Four main results may follow:

1. The parts supplied with blood by the artery are imperfectly nourished, and consequently degenerate. This often occurs in the heart muscle.

2. The blood may clot in the artery and completely stop the flow, resulting in local death (gangrene) of the parts supplied by that artery—a condition not uncommonly seen in the lower extremities of old people.

3. The vessel-wall may bulge at one spot, giving rise to a swelling containing fluid blood, which pulsates with each heart-beat, and is known as *aneurism*. Sudden death may result if this bursts. The aorta and the larger arteries are chiefly affected.

4. The artery, owing to some sudden strain, may rupture, and thus blood may be pumped out into the surrounding tissues. This commonly occurs in the arteries of the brain, giving rise to the condition known as *apoplexy*.

Atheroma occurs to a greater or less degree in all old people, and is especially marked in patients suffering from chronic Bright's disease. One of the conditions named above—namely, gangrene or mortification—calls for more detailed notice. The part affected, frequently the toes, becomes hard, black, and shrivelled, and, should the patient live long enough, eventually drops off. It is usually the seat of considerable pain. The disease may spread for some distance up the limb. If gangrene develops very quickly, the dead parts are moist instead of dry, and are quickly invaded by putrefactive germs, giving rise to considerable fever, rapid spread, and, usually, death in short time.

Diseases of the Veins.—The veins have thinner walls than the arteries, and in certain parts are provided with folds of their lining membrane known as 'valves,' which prevent back-flow. Prolonged strain of any kind may cause bulging of the thin vessel-walls, so that the valves do not completely prevent a backward flow. This strain may occur, in the legs, from the mere weight of the column of blood in people who habitually stand for long periods; or it may be caused by some obstruction to the onward flow of blood towards the heart—for instance, tight garters. Varicose veins are commonest in the legs, but are also met with in the rectum, where they cause the disease known as *piles*. In the legs they are often the cause of considerable irritation of the skin and eczema, which leads to scratching, and this is frequently the starting-point of a *varicose ulcer*. Such ulcers may eat into the enlarged veins, and considerable, even fatal, hæmorrhage may result. Varicose veins are especially liable to rupture from any slight injury, such as a kick. In the same way piles may cause considerable irritation and itching. Hæmorrhage frequently occurs, usually during the passage of a motion, and the blood is bright red in colour.

Pericarditis.—By this is meant inflammation of the fibrous sac surrounding the heart. It is a very common complication of acute rheumatism (rheumatic fever), or it may arise by extension of inflammation from the lungs and pleura.

In the early stages there is usually some degree of pain and tenderness over the region of the heart, and, later, often much difficulty of breathing, with a dusky colour of the face. The patient should be kept as quiet as possible, as there is always a risk of sudden death.

DISEASES OF THE HEART.

There are two chief forms of heart disease: (1) that which primarily attacks the valves, and secondarily the muscular walls; (2) that which primarily attacks the walls.

When the *valves* are diseased, their edges become thickened and deformed, so that they obstruct the passage of blood, and,

by imperfectly closing, allow of backward flow. Hence increased work is thrown on the muscular walls of the heart. The latter, following the usual custom of muscles, at first increase in thickness and strength (*hypertrophy*), to cope with the extra work. Eventually, however, the limit of possible increase is reached; the muscle commences to weaken and give way, the walls to stretch, and the cavities of the heart to dilate. The valves involved are almost always those on the left side of the heart. Heart-disease primarily affecting the muscular walls is usually caused by atheroma of the arteries. The muscle-fibres become partially converted into fat, and hence lose their power, a condition known as 'fatty degeneration.'

Causation of Heart-Disease.—By far the commonest cause of valvular heart-disease is *rheumatism*, especially *rheumatic fever*, and the younger the patient is when attacked by rheumatism, the more likely is the heart to be affected. Next to rheumatism, the commonest cause is one of the infective fevers, especially scarlet fever, small-pox, or pneumonia. Lastly, excessive strain from over-exertion may bring about disease of the valves, the aortic valves being especially liable to be attacked in this way. Prolonged overwork is also liable to cause enlargement (hypertrophy) of the heart, in the same way as it causes enlargement of any other muscle, and eventually this may end in dilatation. Primary fatty disease of the walls of the heart is, as already mentioned, generally caused by disease of the arteries supplying the heart with blood. The heart also undergoes great enlargement in persons suffering from some forms of kidney disease (Bright's disease).

Symptoms.—The following are the commonest symptoms of heart-disease:

1. Palpitation.
2. Shortness of breath.
3. Flushing or pallor of face.
4. Fainting attacks (syncope).
5. Changes in the pulse-beat.

6. Swelling (dropsy), commencing in the feet and legs.
7. Cough, with sometimes expectoration of blood-stained fluid.
8. Disturbed sleep and giddiness.
9. Pain in the region of the heart.
10. Digestive symptoms.

It is desirable to point out at once that heart-disease cannot be diagnosed from symptoms alone, and that in other diseases, especially anæmia and indigestion, many of the above symptoms are present. A nurse must not, therefore, jump to the conclusion that because a patient presents some of the above symptoms heart-disease is necessarily present; on the other hand, heart-disease may exist for some time and give rise to no symptoms whatever.

By *Palpitation* is meant an irregular or forcible action of the heart, of which the patient is painfully aware. Apart from heart-disease, it is common in nervous subjects and in those who suffer from indigestion. It is a pretty constant symptom in all forms of heart-disease.

Shortness of Breath is again a constant symptom, especially in those suffering from fatty degeneration of the walls of the heart and in those whose heart is dilated. It may occur in *anæmia* and in many other conditions where the heart is perfectly healthy.

Flushing, or the opposite condition, *Pallor*, of the face is an unpleasant symptom in many cases of heart disease.

Fainting Attacks (*Syncope*) are often present in those who suffer from fatty heart, but are less common when the valves only are affected.

Changes in the Pulse.—The number of pulse-beats per minute may be increased or diminished; the beats may be *irregular*, by which is meant that they do not follow each other at regular intervals, or the pulse may be *intermittent*—*i.e.*, occasionally miss one or more beats. Irregularity is a more serious condition than intermittency.

Dropsy.—The dropsy associated with heart-disease com-

menees in the feet, and is often first noticed toward the end of the day or after prolonged standing. It is a frequent symptom in valvular disease and in old people when the heart-muscle is beginning to lose its power. In valvular disease it is most common when the *mitral valve* is affected, and is then caused by obstruction to the onward flow of the blood. This obstruction, operating backwards through the lungs and the right side of the heart, affects the veins, and it is owing to the pressure of the long column of blood that it is first felt in the feet and legs. When this flow in the veins is obstructed, the serum of the blood exudes through their walls and gives rise to the dropsy. It is necessary to point out that dropsy of the feet and ankles occurs in other conditions beside heart-disease, especially anæmia and Bright's disease.

Cough with expectoration of blood-stained mucus is caused by the inability of the pulmonary veins properly to empty themselves, which brings about a congestion of the lungs.

Disturbed Sleep and *Giddiness* are common symptoms. Patients often start up from their sleep with the sensation of falling through the bed; they can generally sleep better when propped up with a bed-rest.

Pain in the region of the heart may be entirely absent, or there may be a slight feeling of discomfort. In some cases, especially in fatty heart, patients are suddenly seized with the most agonizing pain (*angina*), and often die in one of these attacks.

Digestive Symptoms, such as vomiting, diarrhœa, or jaundice, may be present.

Insanity is not particularly associated with heart-disease, but people who have disease of the aortic valves are often very irritable, and, should they become insane, generally suffer from acute mania or agitated melancholia; suicidal impulses, too, are not uncommon in them.

Special Nursing.—Patients suffering from heart-disease should be kept quiet, and, if possible, should not be allowed to get excited. They should not be hurried when walking,

etc., but given plenty of time, and this is especially important when going upstairs or up any incline, or after meals. Sudden frights or shocks should always be avoided. They should be encouraged to eat their meals slowly, and special attention should be paid to their digestive system. They should be kept under observation, and any symptoms suggesting an aggravation of the disease, such as shortness of breath or swelling of the feet, should be noted and reported. In the later stages it is generally necessary to keep them in the recumbent position, either in bed or lying on a couch. Some patients when lying down are more comfortable with the head and shoulders raised. In fainting, patients should lie flat, with the head low, and the clothes should be loosened about the neck and waist.

DISEASES OF THE RESPIRATORY SYSTEM.

Diseases of the respiratory system are very common amongst the insane, and form a large proportion of the cases treated in the infirmary wards; it is therefore very desirable that nurses should have a proper knowledge of the more important symptoms, in order that, should any of these occur in a patient, they may be able at once to call the medical officer's attention to the fact, and also that they may be able to nurse intelligently any cases which come under their care. It is proposed, first, to generally discuss the chief symptoms of disease of this system, and afterwards to give a short account of those diseases most commonly met with.

Cough is a constant symptom in affections of the respiratory tract, and although it may occur in other conditions, such as hysteria, aneurism, etc., it is, in the large majority of cases, due to some trouble in the lungs or air-passages. The kind of cough varies in the different diseases. In *pneumonia* it is very characteristic, being frequent but short, the patient trying to restrain it on account of the pain. In *pleurisy* it is painful, and usually there is no expectoration. In *acute bronchitis* it is very frequent and distressing; at first it is dry, whereas when

the disease becomes chronic it is easy, and attended with expectoration. It is generally worst early in the morning, when the patient first wakes up. In early *phthisis* it is short, dry, and hacking; but later becomes frequent, very distressing, and is attended with expectoration.

Expectoration varies considerably in the different diseases. It may be viscid and frothy, when it is called 'mucous,' or it may be thick, yellowish or greenish, and airless, when it is known as 'purulent.' In *pneumonia* it is quite characteristic, being very viscid, generally clear, and 'rusty' in colour. In some diseases it may be streaked with blood. In *gangrene of the lung* it is dark in colour and very offensive, and it is also offensive in certain diseases of the *bronchi*.

Pain is a very marked symptom both in *pneumonia* and *pleurisy*. In these diseases it is described by the patient as sharp and stabbing, and is much accentuated by deep breathing and coughing. In *acute bronchitis* it is generally described as a feeling of rawness behind the sternum. Usually there is not much pain in *phthisis*, unless the pleura is extensively involved. In every condition in which the cough is frequent and distressing the patient complains of pain round the waist from the constant jerking of the diaphragm.

Rate of Respiration is increased in frequency in almost all respiratory diseases, and the normal ratio of four pulse-beats to each respiration is, as a rule, disturbed, the pulse-rate not being correspondingly raised. This is especially noticeable in *pneumonia*, where the respirations are often as high as fifty or sixty a minute. In *phthisis* and *bronchitis* the rate is also increased according to the severity of the disease, but not to the same extent as in pneumonia. Children always breathe more quickly than adults, and the pulse also is more frequent.

Changes in the Complexion.—When the disease of the lungs is very extensive and air cannot enter properly, the complexion assumes a dusky hue, due to the blood not being able to obtain sufficient oxygen. In *asthma*, a disease in which there is spasm of the smaller bronchial tubes which prevents the

entry of air, this symptom is very marked, as it is also in some forms of *bronchitis*. In *phthisis* the face is usually pale, except for two bright red patches on the cheeks, constituting the well-known *hectic* flush of the disease.

High Temperature.—In all acute lung diseases the temperature is raised. In *acute bronchitis* and *pleurisy* it is moderate, not much above 102° F., and subsides with the disease. In *chronic bronchitis* the temperature, usually, is not raised. In *pneumonia* the temperature rises rapidly, often in a few hours, to as high as 104° F.; it generally remains high for seven days, and then falls rapidly (*crisis*) to normal or below. In *phthisis* the temperature rises each evening, sometimes as high as 104° F., and falls to normal or thereabout in the morning, constituting the *hectic* temperature. This same form of temperature is seen in patients who have accumulations of pus in any part of the body. Amongst the insane a rise of temperature is often the first indication of lung trouble, other symptoms being absent.

Sweating, or Dryness of the Skin.—In phthisis a very distressing symptom is the cold sweats which often occur in the early morning hours when the patient is asleep; they are spoken of as 'night sweats,' and they are very exhausting. They occasionally occur apart from *phthisis* when there is great debility. In *pneumonia* the skin is very dry and hot, and a similar condition is met with in one other disease—*i.e.*, *scarlet fever*. The crisis of pneumonia is often attended by profuse sweating.

Wasting takes place in almost all chronic lung diseases, but it is especially marked in *phthisis*, and the higher the temperature is in this disease, the more rapid is the loss of flesh. Old people affected with *chronic bronchitis* are also similarly affected.

It is necessary to warn nurses that some of the above symptoms are not uncommonly absent in the insane even when the disease is well established, and this is particularly the case with cough and pain. The expectoration, too, is frequently swallowed, and hence may escape notice.

The more common respiratory diseases met with are *bronchitis*, *broncho-pneumonia*, *pleurisy*, *asthma*, and *phthisis*. For convenience of description, acute *pneumonia* will also be included, although by many authors it is now classed with the specific fevers. In describing these diseases it will be necessary again to refer to the various symptoms already mentioned, as they vary in severity and prominence in the different affections.

By **Bronchitis** is meant an inflammation of the lining membranes of the bronchial tubes. It may be acute, *i.e.*, recent, or it may be of long standing, when it is spoken of as 'chronic.' Children and old persons are particularly liable to be attacked. It is generally caused by exposure to cold and damp air. The chief symptoms of *acute bronchitis* are—(1) Rise of temperature to about 100° F. or 101° F.; (2) some difficulty in breathing; (3) soreness behind the sternum; (4) cough, at first dry and hard, and later attended with frothy mucous expectoration; this in the more chronic cases becomes yellowish and purulent, and is rarely streaked with blood. Healthy adults generally recover in from one to two weeks, but if the attacks are frequent they are apt to lead on to the chronic form. In children and old people it not uncommonly ends in death. The danger to life is greater when the smaller bronchi are attacked.

Chronic bronchitis is usually caused by repeated colds or by the inhalation of irritating gases, such as tobacco smoke. The disease at first is most marked in the colder months of the year, and disappears in the summer, but later the patient is afflicted all the year round. The chief symptom is cough, worse early in the morning, and there is usually abundant muco-purulent expectoration. In long-standing cases the lungs become distended (*emphysema*), and lose their power of contraction; there is then marked shortness of breath. The right side of the heart may dilate from the difficulty it experiences in pumping the blood through the lungs, and in old people this is a common cause of death.

Broncho-Pneumonia is an inflammation of the terminal

bronchi and their air-cells; it is probably caused by micro-organisms. It may be a primary disease, but is often secondary to bronchitis or one of the infectious fevers, especially measles or whooping-cough. It is much more common in children than in adults. The disease usually commences with a rigor, or, in children, with convulsions; the temperature rises rapidly to 104° F.; there is a painful, hard cough and great difficulty in breathing, which shows itself by the bluish colour of the face. It is a very fatal disease in children, but adults as a rule recover, unless the disease should be tubercular.

Pleurisy may be of two kinds—(1) dry, the two surfaces of the pleura being inflamed and covered with exudation; or (2) there may be a large amount of serous effusion into the pleural cavity, compressing the lung and constituting pleurisy with effusion; if this should be on the left side, the heart is often displaced. The most marked symptom in the first variety is the sharp, stabbing pain, made worse by breathing or coughing; and in the second variety the difficulty of breathing, or *dyspnœa*, as it is called. The temperature in both varieties rises gradually, and may reach 103° F.; it subsides with the disease. Ordinary dry pleurisy is usually attributed to chill, but when there is effusion it is almost always tubercular, unless due to injury. The serous effusion in debilitated subjects and in certain other conditions may become purulent, and the disease is then known as *empyema*.

Asthma is a disease caused by spasm of the smaller bronchi preventing the air properly reaching the air-cells. The attacks are recurrent, are frequent at night, and are characterized by great difficulty in breathing. Epileptic attacks are occasionally replaced by asthma.

Acute Pneumonia, or Inflammation of the Lungs, is now regarded as an infectious disease, and is due to a special micro-organism. The disease commences suddenly, almost always with a *rigor* or convulsion, and the patient complains of headache and general pains. The temperature rises rapidly to 104° F., or even higher, and remains about this height until

the crisis, which usually occurs from the seventh to the tenth day, when it falls rapidly. Pain in the side is very marked; there is a short, painful cough, at first dry, but later attended with 'rusty,' very viscid sputum. Respiration is very rapid, as is also the pulse. The patient has an anxious expression, and appears very ill; there is often an eruption (*herpes*) about the mouth. The crisis is attended by profuse sweating, and the patient almost immediately appears much better. *Delirium*, sometimes amounting to acute mania, may occur when the fever is at its height. Pneumonia is a very fatal disease, especially in drunkards.

Tubercular Disease of the Lungs (*Phthisis* or *Consumption*) is very common amongst the insane, and every year is responsible for a large number of deaths. Those suffering from mental weakness, either dementia or imbecility, are particularly prone to develop the disease. The cause of phthisis is a micro-organism—the tubercle bacillus. In the majority of cases this is probably inhaled, but it may be swallowed in infected meat or milk. Having once settled in any part of the body, and not being destroyed by the white blood-corpuscles, it rapidly multiplies and sets up a process of ulceration, destroying the tissues around. Phthisis generally commences insidiously, but in some few cases the onset may be sudden, resembling an attack of broncho-pneumonia. Amongst the insane, often the first symptom noticed is that the patient is losing flesh and does not take food well. If then the temperature be taken regularly, it will be found to be raised in the evening. Cough may be present, but in the early stages it is not so marked amongst the insane as in normal people; occasionally the patient may have an attack of hæmorrhage from the lungs. When the disease is well established the wasting is rapid, and the temperature is of the *hectic* type already described. The cough is very troublesome, and attended with abundant muco-purulent expectoration, often streaked with blood. It must, however, be remembered that not uncommonly the insane swallow their expectoration.

Night sweats are of frequent occurrence. Sometimes the patient complains of pain in the side. Towards the end of the disease diarrhœa often sets in, from infection of the intestines, and this still further exhausts the patient. With suitable surroundings and treatment the disease may be checked; the temperature and weight are the best indications as to the progress of the case. It cannot be too strongly impressed on nurses that the source of infection is the tubercle bacillus which the patient coughs up with the sputum, and that if this sputum be allowed to dry the bacilli are blown about and breathed in by other persons. The expired air of consumptives is not itself infective, but during cough may contain small particles of infected mucus.

DISEASES AND DISORDERS OF THE DIGESTIVE SYSTEM.

Owing largely to faulty habits in eating, etc., disorders of digestion are common amongst the insane; but actual disease is probably not more frequently met with than amongst sane persons, and it will only be necessary to describe two diseases, *dysentery* and *hernia*. For convenience, *peritonitis*, although not strictly a disease of the digestive system, will also be briefly discussed here.

Disorder of the digestive system gives rise to a group of symptoms commonly termed **Indigestion** or **Dyspepsia**, meaning thereby failure to digest the food properly. Much the same symptoms, more or less modified, also occur in most diseases of the alimentary system. These symptoms of indigestion will be discussed in detail, and the modifications of them met with in one or two of the more common abdominal diseases will be pointed out.

Symptoms.—*Changes in the Appearance of the Tongue.*—This organ may be large and indented at the edges by the teeth, and is often coated with a thick white fur; or it may be small, red, and irritable-looking. The former condition is

more common in ordinary dyspepsia, and the latter in diseases of the stomach.

Bad Taste in the Mouth.—This is often complained of, and may be the starting-point of delusions that the food is tampered with.

The Breath.—This may be very offensive. Apart from dyspepsia, it is a common condition in persons who neglect to brush their teeth. The breath is stated to have a distinctive odour in patients who refuse their food for lengthened periods.

Pain varying in character, intensity, and position is a fairly constant symptom in diseases and disorders of the digestive system. In indigestion it is more a feeling of weight or oppression than actual pain, although in bad cases it may amount to the latter. The pain is usually referred to the region of the stomach just behind the lower part of the sternum. It comes on a short time after a meal, and lasts for three or four hours. If the stomach be inflamed the pain is always severe. In gastric *ulcer*, a disease frequently caused by prolonged indigestion, the pain is very severe and of a burning character; it is made much worse by taking food, and is felt behind, at a spot between the shoulders, as well as in front. In addition to the pain, there is generally marked tenderness over the painful area. In *cancer* of the stomach the pain may be very severe. When the intestines are the particular part affected, the pain is often of a griping or colicky nature; should this be only caused by irritating material in the intestines, it may be relieved by pressure, but if by inflammation, pressure makes it worse.

Vomiting is not so constant a symptom as pain in the milder cases of indigestion, but is very marked in cancer and ulcer of the stomach. The character of the vomit varies. In ordinary indigestion it consists of the undigested food, sometimes mixed with bile. In cancer and ulcer it contains blood, sometimes in large quantities; in fact, it may be almost entirely blood. The blood brought up from the stomach is generally airless and dark in colour, and is often described as having the

appearance of *coffee grounds*. Both in disorders and diseases of the stomach, vomiting, as a rule, relieves the pain. In obstruction of the intestines the vomit has special characteristics. It is generally brownish in colour and offensive. This kind of vomit is known as *stercoraceous*, and betokens a very serious condition.

Flatulence, by which is meant free gas in the stomach and intestines, is a marked symptom in indigestion. The gas is caused by the imperfect digestion of the food, resulting in decomposition and fermentation.

Diarrhœa points to an irritation of the intestines, and is an effort of nature to get rid of the irritating material. It is not so common a symptom in indigestion as the opposite condition, constipation. A form of spurious diarrhœa is not uncommon in people who suffer from constipation (in this condition the patient is constantly passing small very liquid motions). It is caused by irritation of the intestines due to hard lumps of retained fæces, and is best relieved by an enema or a dose of castor-oil. Sometimes blood is passed in the motions; if it comes from high up, it is almost black in colour, and has the appearance of tar; if from low down, near the rectum, it is bright red in colour, and is generally due to piles.

Constipation occurs in most cases of indigestion. It is very common in the insane, and gives rise to much trouble. It is frequently the cause of fits in epileptics, or *seizures* in general paralytics, and not uncommonly is responsible for slight febrile attacks. Although a symptom of indigestion, it may also be a cause. Nurses should always endeavour to satisfy themselves that patients' bowels act regularly. Constipation associated with vomiting, especially if stercoraceous, points to obstruction of the intestines, and should be reported at once. On no account must an aperient be given in such a case.

Loss of flesh always occurs in patients who suffer for any length of time from disorders of the digestive system.

Other symptoms are *headache*, *giddiness*, *flushing of the face*, *palpitation*, especially after meals, and, occasionally, *jaundice*.

Causation.—As indigestion is such a very common malady, and as it is often the precursor of other and more serious diseases, it will be well to enumerate some of the causes which produce it. A large majority of the cases depend on errors in diet. The food may be faulty in quality; certain articles, such as shell-fish, cheese, pastry, and new bread, are notoriously indigestible; or the quantity of food taken may be more than the stomach can digest. The food may be improperly masticated, and passed into the stomach in large lumps, which the gastric juice cannot dissolve. This may depend on faulty teeth, or on the habit some people have of bolting their food, a habit very common amongst the insane. Again, the food may be improperly cooked. It should be remembered that, speaking generally, boiled meats are more easily digested than roast meats. Over-indulgence in alcohol or tea, especially if the latter has been long made, and left in contact with the leaves, is a fruitful source of indigestion. Anxiety and mental worries also interfere with the proper digestion of food.

Management.—This largely resolves itself into a question of regulation of diet, and the nurse must see that the directions of the doctor are carefully carried out both with regard to the quality and the quantity of the food taken. If patients cannot or will not properly masticate their food, it is advisable that they should have a mince diet. It is of great importance to pay attention to the bowels, for, as already stated, constipation may not only be a symptom, but also a cause of indigestion. If the teeth are the source of the trouble, it is necessary to have defects in them remedied.

Dysentery is, unfortunately, very common in asylums, and in every year is responsible for many deaths. It is an acute infectious disease characterized by ulceration of the intestines, the large bowel being chiefly affected. The infection is given off in the stools, and may be communicated from one patient to another by dirty linen, bed-pans, etc.

Symptoms.—Sometimes the disease commences very suddenly, with high temperature and diarrhœa, the motions containing large quantities of blood. In other cases the onset is more gradual, the patient complaining for two or three days of diarrhœa and slight fever. Blood and mucus then appear in the motions, which continue to be very frequent. Often the stools are small, and may consist almost entirely of *mucus* tinged with blood. In favourable cases, after a week or so the blood and mucus disappear, and the patient begins to pass shreds of the lining membrane of the intestines, loosened by the ulceration. These gradually become fewer and the attack ends. In bad cases which are going to end fatally, the diarrhœa continues, the temperature remains high, and the patient dies from exhaustion. Dysentery is a disease very liable to relapse, even after months or years, and, therefore, patients who have once been attacked should, if possible, be kept in a ward by themselves, or at least under special supervision. These relapses are often much milder than the original attack, and are very apt to escape the notice of the nurse unless the patient should complain. They are, however, equally infectious, and are often the starting-point of epidemics.

Management of Cases of Diarrhœa and Dysentery.—All cases of diarrhœa should be treated as if they were of an infectious nature. The patient should be kept apart, the stools disinfected, and the clothing sent to the laundry in separate bundles, marked, 'To be treated apart from the other articles of clothing and bed-linen.'

Nurses should be particular in washing their hands, etc., after attending to these patients.

All vessels used by patients suffering from diarrhœa should be well rinsed out with the disinfecting solution ordered by the doctor. Vessels intended to receive motions should contain a small quantity of the solution, and each stool when passed should have poured over it double its bulk of the same solution. It is well, also, when water is used for the cleaning of the floors of the rooms, to add a proper proportion of the disinfec-

ting solution to the water, and scrupulous attention should be paid to the cleaning and disinfection of water-closets (walls, floor, pans, etc.).

Hernia.—By 'hernia' is meant the escape of an organ from the cavity in which it is naturally contained, by an accidental opening in the walls. When the word is used by itself it has reference to an escape of some part of the intestine from the abdominal cavity, but there are other forms of hernia, such as hernia of the lungs, etc. In this section hernia of the intestines only will be dealt with. In some parts of the abdominal wall, especially in the region of the groin, there are weak spots, and under certain conditions, such as straining, a knuckle of intestines is liable to be forced through one of these, and to protrude under the skin as a roundish lump. It is usually quite small at first, not much larger than a nut, but in cases of long standing it may reach the size of an orange, or become even larger.

Symptoms.—Often, beyond a slight dragging sensation, the hernia gives rise to no marked symptoms. In some cases it quite disappears when the patient is in bed, and comes down again on standing. Under certain conditions the knuckle of intestine becomes compressed by the sides of the narrow aperture through which it has escaped, and in consequence the blood-supply is shut off and the intestine becomes *strangulated*. Urgent symptoms at once supervene, there is generally great pain in the part, and the patient is very restless. There is absolute constipation and constant vomiting, the vomit soon becomes greenish-brown and has the odour of fæces, and is known as 'stercoraceous.' Unless the condition can be relieved, it quickly proves fatal.

Management.—Patients should be carefully inspected when bathing and at other times, and any lumps about the groin should always be reported. Those known to have a hernia should not be allowed to undertake any work involving severe straining. A truss should always be worn; it should be put

on in the morning before the patient gets up, care being taken to see the hernia is first reduced, and it should not be removed until the patient is in bed at night. If possible, the bowels should be kept regular. The association of vomiting and constipation should always excite suspicion of strangulation in those suffering from hernia. Aperients must on no account be given should strangulation occur.

Peritonitis.—By peritonitis is meant inflammation of the lining membrane of the abdomen.

Causes.—(1) Extension of inflammation from, or perforation of, one of the organs contained in the abdomen; (2) wounds of the abdominal wall, such as stabs, bullet wounds, etc.; (3) infection by the tubercle bacillus—tubercular peritonitis.

Peritonitis is a very fatal disease; the chief *symptoms* are—(1) Intense pain and tenderness over the abdomen, the patient usually lying on his back, with the knees drawn up to relieve the tension of the muscles; (2) swelling of the abdomen; (3) the temperature may be high, but in some cases it does not rise above normal; (4) constant vomiting; (5) the patient's face looks blue and pinched.

Diabetes.—This is a disease characterized by the presence of sugar in the blood, which is excreted in the urine. In a large proportion of the cases there is found to be disease of the pancreas.

The chief symptoms are great thirst, the passage of a very large amount of urine containing sugar, a voracious appetite, and progressive emaciation. In some cases the disease may go on for years, especially in older people; but in younger patients it is often quickly fatal.

Two important complications of this disease to be remembered are—(1) Boils and carbuncles, which are extremely common, and (2) diabetic *coma*, a form of unconsciousness, which may come on very suddenly, and generally proves fatal.

The important point in the nursing is to see that the prescribed diet is adhered to. This diet is, as far as possible, free from sugar and starch.

DISEASES AND DISORDERS OF THE URINARY SYSTEM.

The body gets rid of its waste by various excretory organs, the chief of these being the lungs, the skin, the intestines, and the kidneys. The diseases of the first three of these have already been dealt with, and there remains only the last, but the most important so far as excretion is concerned—*i.e.*, the kidneys. The **kidneys** are situated at the back of the abdomen, opposite the ninth, tenth, and eleventh ribs, on each sides. Their function is to extract from the blood certain waste and harmful products, the two most important being *urea* and *uric acid*. These products, dissolved in water, also extracted from the blood, pass along two tubes, called the ureters, to the bladder, which is situated in the pelvis, and acts as a receptacle for the urine until it is to be passed.

Causes.—The commonest form of kidney disease is inflammation, which may be either acute or chronic; this is known as Bright's disease, and is so named after the physician who first described it. It may depend on a chill, but more often is due to one of the specific fevers, especially scarlet fever and diphtheria. When the inflammation arises from these causes, it is acute in nature. In its chronic form it may be due to gout or prolonged over-indulgence in alcohol. The kidneys may also be affected by tuberculosis, but this is generally secondary to tubercular disease in some other part of the body.

Symptoms.—Kidney disease manifests itself in two distinct groups of symptoms. The first consists of changes in the urine, and the second of general bodily symptoms. In some cases there are also symptoms referred to the kidneys themselves, but these need not be discussed here. The urine in health is a pale-yellow, clear fluid, with a slightly acid reaction and a *specific gravity* of about 1020 (water = 1000). The normal quantity passed in the twenty-four hours is about 50 ounces, but this varies somewhat, depending on the amount of fluid drunk and on the amount got rid of by the skin. If the

quantity of urine passed is small, it is always dark in colour, as it is the water, in which the solids are dissolved, which varies, not the solids themselves. Conversely, if the amount of urine be large, it is pale in colour. In acute inflammation of the kidneys (acute Bright's disease) it is usually very scanty, and contains *albumen*, and often blood. The appearance of urine containing blood varies according to the amount of blood present; if this be large, the urine may be almost black, like stout; but if the quantity of blood be small, the urine may only have a *smoky* appearance. The presence of albumen can be determined by boiling, when, if present, it solidifies and forms a thick white cloud in the urine, which is not cleared up by nitric acid; albumen is never found in health. Sometimes in acute Bright's disease no urine is formed by the kidneys, giving rise to the condition known as *suppression of urine*. It is very serious, and, unless relieved, it quickly ends in death. In the more chronic forms of Bright's disease the urine varies much in quantity and quality, but does not contain blood. Very large amounts may be passed, when it is always pale, or the amount may not exceed 10 to 20 ounces in the twenty-four hours. It generally contains albumen. Besides blood and albumen, the urine may contain *bile* or *pus*. The former is present in the urine in cases of jaundice, and gives it a greenish-brown colour. Pus may be present when the kidneys or bladder are affected with tuberculosis, or when these organs contain a stone. It settles at the bottom of the urine as a creamy-white deposit. Sometimes even in health, when the urine is scanty, and has been allowed to stand and get cool, it will be noticed that it has become turbid, and the bottom of the chamber containing it is covered with a reddish deposit. This deposit is known as *urates*, and is due to the fact that, owing to the water being scanty in amount, it cannot, when cold, hold in solution all the solids passed. If the urine be heated, it will be found to clear again. Apart from kidney-disease, the quantity of urine passed is very large in cases of

diabetes, and often also in cases of hysteria and nervous excitement. It is usually much diminished in quantity in all forms of fever. It is necessary here to refer to the condition known as *retention of urine*. By this is meant that the urine is retained in the bladder, and this organ in consequence becomes greatly distended. It must be carefully distinguished from 'suppression.' Patients suffering from general paralysis often have retention of urine.

The general bodily symptoms of kidney-disease are—(1) dropsy, (2) changes in the sight, and (3) convulsions (*uræmia*).

Dropsy.—When the amount of urine formed by the kidneys is small or suppressed, the serum of the blood exudes into the cavities and tissues of the body, and gives rise to the condition known as dropsy. It generally first shows itself as a puffiness beneath the eyes, most noticeable in the early morning; whereas it will be remembered that in heart-disease dropsy first appears about the feet and ankles after prolonged standing.

Changes in the Sight.—Patients who have kidney-disease often suffer from dimness of sight, and should a patient complain of this, it must be at once reported, as it is often a premonitory symptom of uræmia. They are also liable to get small hæmorrhages into the back of the eyes.

Convulsions (*Uræmia*).—When the kidneys are so diseased that they cannot properly perform their functions, poisonous products accumulate in the blood, and produce convulsions, quickly passing into unconsciousness and death. To this condition the name of 'uræmia' is given.

The heart and arteries are often affected in kidney-disease. The heart becomes much enlarged, and the arteries become atheromatous.

Management.—It is important that patients with kidney-disease should not suffer from chill, and they should always wear flannel. The diet, too, requires careful attention, and the orders of the doctor regarding this must be strictly obeyed. It is often desirable to keep a daily record of the amount of

urine passed. If a specimen has to be saved for testing, it is usually taken from that passed early in the morning, and should be put aside in a proper urine-glass with the patient's name attached. In cases of retention of urine it may be necessary to pass a catheter (see p. 140).

THE SPECIFIC FEVERS.

The specific fevers form a well-marked group of diseases which are distinguished by certain defined characteristics from other groups of diseases. Firstly, they are *infectious—i.e.*, they can be communicated from one person to another; secondly, they are probably caused by certain special poisons known as *micro-organisms*, every disease having its own micro-organism, and hence they are termed *specific;* thirdly, they all run a *well-defined course;* and, fourthly, an attack confers *immunity* for a longer or shorter period from a second attack of the same disease. When large numbers of people are attacked at one time by one of these fevers, it is spoken of as an *epidemic;* occasionally, however, only isolated cases occur, and these are then known as *sporadic* cases. Certain localities are never free from some particular form of infectious disease, and when this is the case the disease is said to be *endemic* in that particular neighbourhood. The micro-organisms which are the cause of these infectious diseases are very minute forms of vegetable life; they exist in many different shapes, and, according to their shapes, are known as *bacteria*, *bacilli*, etc.; they multiply with extreme rapidity, and most of them grow well at about the temperature of the human body. They may be present in water or other fluids as well as in the atmosphere. The micro-organisms gain entrance to the body either by being inhaled or being swallowed in food or fluid. After their entrance a certain period elapses before any marked symptoms develop. This period is spoken of as the *incubation* period. It varies in length for the different fevers, and also within certain limits for each particular fever.

During this time the organisms are developing in the body, and towards the end of it the patient often complains of chilliness and not feeling well; he may have some headache, and pains in his limbs; his appetite fails, and he generally sleeps badly. Following the incubation period comes the *invasion*. This may be sudden, and attended with rigors and vomiting, or in children with convulsions; or it may be gradual, so that it is difficult to fix the exact time the disease commences. The temperature is raised, headache is severe, appetite is lost, and there is often much prostration, in addition to any special symptoms of the particular fever. An eruption is present in many of the specific fevers. This eruption varies according to the nature of the disease, and is a valuable aid in distinguishing one fever from another. If the patient is going to recover, the severe symptoms, after lasting for a certain time, abate; the change may take place suddenly, when it is spoken of as a *crisis*, or the improvement may be gradual, when the disease is said to end by *lysis*. Following this comes the period of convalescence. The illness may be prolonged by various *complications* and *sequelæ*, and it is necessary that the nurses should be acquainted with these in order that precaution may be taken to guard against them. A brief account will now be given of the more common infectious fevers.

TYPHOID FEVER.

This disease is most prevalent in the autumn months. Young people under the age of twenty-five are more liable to be attacked than older persons. Unless death should occur earlier, an attack lasts from four to six weeks. The micro organisms generally gain entrance to the body by means of infected water.

The *incubation* period is from seven to fourteen days, but may be prolonged to twenty-one days.

Symptoms.—Toward the end of the incubation period the patient complains of headache, lassitude, and loss of appetite. Nose bleeding may also occur. The *onset* is gradual. During the first week the temperature slowly rises, until at the end it has reached 103° F. or higher, the headache is severe, and sleep is much disturbed. There may be some diarrhœa. In the second week the *rash* appears; it consists of small rose-coloured spots about the size of a millet-seed, and they are first seen on the abdomen, back, and thighs. Each

spot lasts four or five days. They disappear on pressure. The temperature remains high ; the tongue is coated, and sometimes dry and brown ; the headache, however, disappears, but the patient is very dull and stupid ; diarrhœa is often severe, the motions being like pea-soup—in some cases there may be constipation ; the abdomen is generally distended. In the third week the temperature begins to fall, and should reach normal at the beginning of the fourth week ; there is then marked prostration and loss of flesh. In the fourth week convalescence begins, the tongue cleans, appetite returns, and diarrhœa ceases. The rash usually disappears about this time. *Relapses* are not uncommon during the convalescing period. The poison of typhoid fever particularly attacks the intestines, and causes a number of small ulcers. The danger continues until these ulcers are healed.

Complications and Sequelæ.—Towards the end of the second week profuse *hæmorrhage* may take place from the intestines, from one of the ulcers opening a blood-vessel. Later an ulcer may *perforate* the intestines and set up peritonitis. Pneumonia and severe bronchitis are also liable to occur. During convalescence *clotting of blood in the veins* is not uncommon. The mortality is usually about 20 per cent. of the persons attacked.

Nursing of Typhoid Fever Patients.—The infection of typhoid fever is given off from the body in the stools and urine. It is advisable, therefore, whenever possible to mix both the urine and stools with sawdust and burn the whole ; but if this cannot be done strong commercial carbolic acid should be added to the contents of the chamber, and, after standing for some two or three hours, the chamber may be emptied down the lavatory. Night-stools and bed-pans should be thoroughly disinfected.

All soiled linen should be soaked in 1 in 20 solution of carbolic acid and sent separately to the laundry. The nurse should always carefully wash her hands after attending to the patient. Typhoid is essentially a debilitating disease, and suitable nourishment is most important to keep up the patient's strength. The doctor's orders concerning the diet should be strictly obeyed, and on no account must anything be given that has not been ordered.

SCARLET FEVER.

Scarlet fever is a highly infectious disease, and is characterized by a diffuse red rash and sore throat. Children are more liable to be attacked than adults, and the disease is more prevalent in the autumn months.

The *incubation* period is short, usually from two to five days, but may be only twenty-four hours.

The *invasion* is sudden, and is generally ushered in with rigors and vomiting, or in children with convulsions. The temperature rises rapidly, and may quickly reach 104° F. ; the skin is very dry, the pulse rapid, and the tongue furred. Sore throat is a very early

symptom. The *eruption* appears on the second day, and consists of a large number of small red spots which quickly join to form a diffused bright red rash; it is first seen on the chest and thighs, and soon spreads over the whole body, except the face, which is usually free. It lasts, as a rule, about three days, and then begins to fade. The tongue at first is red at the tip and sides, and furred in the centre; soon red spots show through the white fur, and give rise to the appearance known as the 'strawberry' tongue. The throat may be merely red and inflamed, or there may be extensive ulceration. As the rash and temperature subside the skin begins to peel, and this usually lasts three weeks. Scarlet fever varies much in severity: some cases are very mild, and the rash may be hardly noticeable; other cases may be so severe that the patient is killed by the poison before the rash has time to appear.

Complications.—The most common complications of scarlet fever are—(1) Acute inflammation of the kidneys—Bright's disease; (2) ear complications; (3) hæmorrhage from the throat; (4) inflammation of the joints. Bright's disease shows itself by a diminished quantity of urine being passed, which contains albumen, and often blood. The urine should be examined daily.

Nursing Precautions.—The patient must be isolated in a well-ventilated room; care must be taken to protect him from chills, and the throat and ears need special attention. When desquamation, or peeling of the skin, commences, it is usual to rub the patient daily with an antiseptic oil. All shed skin should be swept up and burnt, as this is particularly liable to spread the infection. Discharges from the mouth and nose should be wiped away with lint or rag and burnt. All clothing should be soaked in 1 in 20 carbolic acid and sent to the disinfector. Spoons, cups, etc., should be disinfected with boiling water. The nurse should thoroughly bathe herself, wash her hair, and put on clean clothes, before mixing with other people. The infection of scarlet fever clings with great tenacity to clothing, etc. The patient is not free from infection until all peeling has ceased, and special attention must be paid to the hands and feet, where it lasts longest.

MEASLES.

Measles is a very infectious disease, and, like scarlet fever, is most common in children.

The *incubation* period is from seven to twenty-one days.

The *invasion* is more gradual than in scarlet fever. The patient complains of slight headache, and seems to have a cold in his head. Running from the eyes and nose is always a prominent early symptom, and there is often a cough; the temperature is raised. The eruption appears on the fourth day, first on the forehead. It consists of reddish spots, which soon join and form crescentic patches. It is not so bright as scarlet fever, and is slightly raised above the surrounding skin. From the face it spreads all over the body, and lasts for about three or four days. As it subsides, there is peeling

of the skin, which differs from that of scarlet fever in being very fine and branny. During the height of the disease there is loss of appetite, furred tongue, and headache. The general symptoms usually last a week, and then subside.

Complications.—Bronchitis and broncho-pneumonia are the chief complications to be feared, and are the direct causes of death in the majority of cases in which the disease proves fatal.

Nursing Precautions.—It is most important to place the patient in a well-ventilated room, which should be kept at a temperature of from 60° to 65° F. He must be clothed in flannel and carefully protected from chills. The same precautions regarding the disinfection of clothing, etc., should be taken as in scarlet fever. The infection is chiefly given off in the breath and, possibly, by the shed skin.

SMALL-POX.

Small-pox is one of the most virulent of all infectious diseases, and, in unvaccinated persons, one of the most fatal. It is characterized by an eruption, which is first a papule or pimple, then a vesicle or blister, and lastly a pustule or blister containing pus. The infection is given off in the breath of the patient, as well as by the contents of the pustules and the dried scabs.

The *incubation* period is usually twelve days. The *invasion* is sudden, and is characterized by rigors, intense headache, vomiting, pain in the back, and often delirium. The temperature rises very quickly.

The *eruption* appears on the fourth day, and is first seen on the forehead and back of the wrists. It consists of a number of very hard, 'shotty' pimples, which soon become vesicles, and subsequently pustules. When the rash comes out, the temperature falls, but rises again later. In a mild case the pustules begin to dry up at the end of the second week, and convalescence commences.

Complications.—The complications of small-pox are numerous. Perhaps the most common is some lung trouble, either bronchitis or pneumonia. Inflammation of the eyes is also likely to occur unless great care is taken to keep them clean and free from the discharge from the pustules. Insanity sometimes follows an attack. The mortality in unvaccinated persons varies from 25 to 50 per cent., whilst in those properly vaccinated it is only about 1 to 2 per cent.

Nursing Precautions.—All persons who are brought into contact with small-pox patients should immediately be revaccinated. The greatest care must be taken to prevent the spread of the infection, and particular danger attaches to the dried scabs, which should always be burnt. Linen, etc., should be treated in the way described under Scarlet Fever.

Vaccination or Cow-Pox.—It is probable that cow-pox is small-pox which has been modified by being passed through the cow. At the end of the eighteenth century, Dr. Jenner observed that persons

who had contracted cow-pox were protected from small-pox, and about the year 1796 he commenced the practice of vaccination, which quickly spread to all parts of the civilized world. Since Jenner's day the power of vaccination to protect against small-pox has been abundantly proved, and in the German Army, where vaccination and revaccination are compulsory, small-pox is said to be unknown. During the severe epidemic of small-pox which attacked London, there were employed, in 1901, at the small-pox hospitals 575 members of the staff, none of whom contracted small-pox. In the following year the number employed was 989, of whom one, a nurse, who was said to have previously suffered from small-pox, contracted the disease. At the ambulance stations about 130 members of the staff were employed each year, and only two, coachmen (who carry patients to and from the ambulance), contracted very mild attacks of small-pox. All members of the staff at these hospitals are protected by vaccination.

Vaccination, to be efficient, should be done in at least four places, and revaccination is necessary after about seven years. With ordinary care and cleanliness, no danger attaches to the operation.

DIPHTHERIA.

Diphtheria is an infectious disease characterized by inflammation of a mucous surface, with the formation of a fibrinous membrane on the affected part, usually the throat. Children are more liable to be attacked than adults, and the disease often occurs in epidemic form.

The *incubation* is from two to five days.

The *invasion* is not very acute. The patient complains of headache, chilliness, and pains in the limbs. The temperature rises to a moderate degree. In the majority of cases sore throat is early complained of, and the throat is found on examination to be red, with patches of greyish membrane on the tonsils. This membrane in a day or two spreads all over the throat, and often into the nose and larynx.

When the larynx is affected, there is a croupy cough and great difficulty in breathing, and, in young children, death may occur from suffocation unless *tracheotomy* be performed. In severe cases there is great prostration, and the patient may die from exhaustion apart from the throat condition, and this exhaustion is aggravated by the difficulty experienced in swallowing nourishment. There is no distinctive rash in diphtheria. Formerly it was a very fatal disease. Usually 40 to 50 per cent. of the children attacked died, but since the introduction of the *antitoxin* treatment the mortality has been greatly reduced.

Complications.—The most important and most common complication is paralysis, which usually comes on when convalescence is well advanced. The palate is the part generally affected, and when this is the case there is difficulty in swallowing fluids, which

run back through the nose; the paralysis may also affect the eyes, fingers, and toes. Other complications are Bright's disease and severe hæmorrhage from the throat.

Nursing Precautions.—The infection of diphtheria is given off in the breath and in the discharges and membrane from the affected part. These discharges should be wiped away with lint or rag and immediately burnt. The nurse must not inhale a patient's breath, and must be particularly careful when the patient coughs, as particles of membrane may then be dislodged. The clothes, cups, spoons, etc., used by the patient must be treated in a way already described under Scarlet Fever. The urine must be frequently examined. The patient should be in a well-ventilated room, which must be kept at a temperature between 60° and 65° F. When the patient is threatened with suffocation by the membrane blocking up the larynx, it may be necessary to open the trachea below the obstruction, and to insert a tube for the patient to breathe through. This operation is known as 'tracheotomy.' Great care must be taken to see that the tube does not become blocked. A supply of suitable feathers for cleaning the tube should always be at hand.

MICRO-ORGANISMS.

Micro-organisms, which are also known as microbes, germs, and bacteria, are the lowest and simplest organisms at present known. By some they are regarded as vegetable, while others consider them to be too primitive for this. They consist of single cells, and are so minute that they can only be seen under a powerful microscope; some of them only measure $\frac{1}{50000}$ inch in diameter. They multiply very rapidly; one divides into two, each of these again divides into two, and the process of division is repeated again and again, until in twenty-four hours one organism may have produced 20,000,000. Some kinds of bacteria form minute round bodies, called *spores*, which are capable of again developing into bacteria. These spores are much more difficult to kill than are the bacteria themselves. Many kinds of bacteria do useful work; for example, the yeasts are the active agents in fermentation, the brewing of beer depending on their help. Other varieties, however, are responsible for most, perhaps all, diseases, although in some cases, notably in small-pox, we have not yet been able to prove that any particular organism is responsible. In such cases the bacteria are probably too small to be visible even under the microscope. Most of the disease-bearing bacteria can be classified in three groups, according to their shapes: (*a*) *Cocci*, which are round; (*b*) *bacilli*, which are straight rods; and (*c*) *spirilla*, which are curved or spiral rods. It must be understood that one particular variety of micro-organism causes one particular disease; for example, the typhoid bacillus is the actual cause of typhoid fever, and this disease is never caused by any other organism; diphtheria

is caused by the diphtheria bacillus, and by no other ; syphilis by a particular kind of spirillum; tubercular disease by the tubercle bacillus; and so forth. Certain cocci, called staphylococci and streptococci, cause abscesses, boils, erysipelas, septicæmia, pyæmia, and suppuration of wounds. They are the most common of the septic organisms, and it is principally against their attack that the surgeon has to take antiseptic precautions.

The principal object of medical and surgical work is to prevent infection by disease-bearing bacteria, or, if such infection has taken place, to get rid of the invading organisms. Important methods of prevention are : (1) Free ventilation, by means of which fresh and pure air sweeps out and replaces air containing infectious bacteria ; (2) cleanliness, soap and water acting by washing away bacteria, and being also a useful antiseptic ; (3) destruction or disinfection of infected bedding, clothes, etc. ; (4) sterilization of surgical instruments and dressings ; (5) admission to living-rooms and bedrooms of plenty of sunlight, which kills most bacteria ; (6) inoculation with vaccines, such as the lymph used to protect against small-pox. Examples of the methods used when infection has actually taken place are : (1) The use of antiseptics in surgical cases, these antiseptics either killing the bacteria or at least preventing them from multiplying ; (2) injection of antitoxins, which counteract the bacterial poisons ; (3) opening abscesses and draining away the pus with the organisms it contains.

In different diseases the infective bacteria are found in different situations. In typhoid fever, for example, they pass from the body in the stools and urine ; in scarlet fever they are in the skin and in the discharges from the nose and ears, possibly also in the urine ; in small-pox, in the skin ; in phthisis, in the expectoration ; in dysentery, in the stools ; in diphtheria, in the membrane which forms on the tonsils and palate. It follows from this that in different diseases different methods have to be adopted to prevent infection from spreading.

The infective bacteria make their entry into the body in different ways. In typhoid fever and in dysentery they are swallowed in water and in food ; in septicæmia and erysipelas they infect wounds of the skin or mucous membranes, which wounds may be mere scratches ; in phthisis, whooping-cough, influenza, and small-pox, they gain access in the inspired air. In some diseases, particularly in scarlet fever, small-pox, and diphtheria, clothes, bedding, books, etc., which have been used by the patient, often contain the infective organisms. If such articles are put away without proper disinfection, they are capable of infecting a person who handles them months afterwards.

COMPARATIVE TABLE OF IMPORTANT POINTS OF DIFFERENCE BETWEEN SPECIFIC FEVERS

Disease.	*Incubation Period.*	*Rash*—1. *Appearance.* 2. *Characters.*	*Chief Symptoms.*	*Complications.*	*Infection Disseminated.*	*Special Precautions.*
Typhoid or Enteric	7 to 21 days	1. About eighth day. 2. Small rose-coloured spots on abdomen, chest, and back, continuing to come out until fourth or fifth week. Each spot lasts four days	Gradual onset, headache, loss of appetite, pains in back, and nose-bleeding. Temperature rises gradually. Diarrhœa, as a rule. Later, great prostration	Hæmorrhage from the intestines. Perforation and peritonitis. Thrombosis of bloodvessels	By the stools and urine	To thoroughly disinfect all stools, urine, and soiled linen
Typhus ...	10 to 12 days	1. On abdomen and chest from the third to the fifth day. 2. Dusky mottling with mulberry-coloured spots	Abrupt invasion, rapid rise of temperature, great prostration, and early delirium	Chiefly broncho-pneumonia	By the breath and exhalations from the skin	Isolation, abundant ventilation, and disinfection of all clothing, etc.
Scarlet Fever	2 to 5 days	1. Second day on the chest and thighs, and rapidly spreads. 2. Bright red spots, which join and form a uniform red rash	Sudden invasion, often with rigor or convulsions, rapid rise of temperature, and sore throat	Acute Bright's disease; ear complications; hæmorrhage from throat; inflammation of joints	By the shed skin and discharges from the throat	Isolation. Burn all shed skin, thoroughly disinfect clothes, crockery, and cutlery used by the patient
Measles ...	7 to 21 days	1. Fourth day. 2. Red crescentic patches on the forehead, and rapidly spreads	Running from the eyes and nose, moderato fever. and often sore throat	Broncho-pneumonia	By the breath and discharges from the eyes and nose	As in scarlet fever
German Measles	About 14 days	1. Second day. 2. Round pinkish spots on the face, and soon spreads	Headache, slight fever, and swelling of glands in the neck	None	By the breath and exhalations from the skin	Isolation and disinfection of clothing, etc.

Small-pox	[illegible]	[illegible] the forehead and back of the wrists, changing to vesicles and subsequently pustules	[illegible] of temperature, falling when rash appears, subsequently rising again	[illegible] tion of the eyes, and insanity	[illegible] from the pustules, eyes, and nose	[illegible] rags used to wipe away discharges; thoroughly disinfect all linen, etc.
Chicken-pox	10 to 14 days	1. Second day. 2. Red papules, changing to vesicles, first in back and chest	Slight fever and malaise	None	Dried scabs and exhalations from the skin	Isolation. Burn scabs and disinfect clothing, etc.
Diphtheria ...	2 to 5 days	None	Malaise, moderate rise of temperature, inflammation of throat, with formation of an ash-gray membrane	Paralysis most often of soft palate, eyes, fingers, or toes; Bright's disease	By the breath, pieces of membrane and discharges from the mouth and nose	Not to inhale patient's breath. Burn all pieces of membrane and discharges; disinfect linen, etc.
Whooping-cough	7 to 10 days	None	At first an ordinary cough, which soon occurs in paroxysms, followed by the whoop. Ulcer under tongue common	Bronchitis and broncho-pneumonia	By the breath and expectoration	Disinfect all expectoration
Mumps ...	14 to 21 days	None	Swelling of the glands at the angle of the jaw	Inflammation of glands in other parts of the body	By the breath	Isolation
Influenza ...	1 to 4 days	None	Vary greatly; generally severe headache, pains in back, moderate rise of temperature, and prostration	Bronchitis, pneumonia, prolonged prostration, insanity	Probably by the breath	Isolation and disinfection of clothing, etc.

SECTION V

THE NURSING OF BODILY DISEASES

INSANITY itself is a bodily disease; it is a disease of the brain, and therefore the eare and nursing that are given to every bodily disease should be extended to asylum patients from the moment they enter the institution. Patients suffering from aeute insanity usually have other physieal disorders aeeompanying it, and, as it is important to deal with these as soon as possible, it is usual to treat sueh eases in what are ealled the 'sick-rooms' of the asylum. In addition, the weak, the bedridden and the paralyzed are usually treated there, while every now and then in the able-bodied and ehronie insane an attaek of an ordinary bodily disease or an aeeident neeessitates their removal to the siek-room. These wards, therefore, must be looked upon as the most important in the asylum, and the position of the nurses on duty in them is both diffieult and responsible.

The moment a patient is admitted, she should be treated like a siek person; she should be given to understand that she is in a medieal institution for the treatment of disease, and much of the patient's eonduet during her stay, and most of her reeolleetions after her diseharge, will be influeneed by the attitude with whieh she is at first received and treated by those who look after her. That attitude should be one of patience, taet, gentleness, promptness and faithfulness in earrying out medieal orders. If a nurse earries into her work amongst the chronie patients the experienee gained in the siek-room, if she

treats and cares for the helpless, the infirm and the epileptic in the same spirit in which she nurses a case of puerperal fever or pneumonia, she will do much to raise her own authority, to lighten her labours and to make the lot of her charges happier and more tolerable.

On entering asylum service, a nurse usually begins in a junior position in the sick-room, and she should there take every opportunity she can of acquiring a knowledge of sick-room methods as regards beds, keeping of charts and reports, giving of medicines, etc., and she should never lose an opportunity of seeing for herself the carrying out of those nursing duties which may be entrusted only to the charge-nurse. She should never hesitate to ask questions of her superiors. If she shows that she is interested, she will not want for information. The wider her knowledge, the greater will her interest become, and the more certain will be her promotion.

ADMISSION OF NEW PATIENTS.

The admission of a new patient may be a daily occurrence to the nurse; she should try to remember how important a thing it is to the patient. The new case must not be dealt with as a mere matter of routine, but must be studied carefully by itself and its special peculiarities noted. Until the doctor arrives it is the nurse's duty to cheer the patient, to do everything she can to avert her fears, to make her feel that she is really in skilled hands. There are many things the doctor wishes to find out at once, and the patient should first of all be carefully undressed and put to bed. Usually the first thing he orders is a cleansing bath, and under no circumstances is this to be given without his permission. If the patient is too weak for that, he will order her to be sponged in bed.

The nurse's duty on taking over the patient is to examine—

1. The clothing.
2. The patient's body.

The *clothing* must be carefully examined to see if the patient has had in her possession any dangerous articles. These, along with money or valuables of any kind, are to be given to the responsible official and noted on the list of clothing. If the clothes contain vermin, they must be wrapped in a sheet and put away where they cannot spread the condition. It should be kept in mind that many a case of acute insanity turns out afterwards to be connected with some acute infectious disease—typhoid, puerperal fever, etc.; if a delirious patient comes to the asylum wrapped in blankets or the bed-clothes, the labour involved in placing the clothes in some disinfectant before drying and returning them may be well repaid.

In **bathing** a newly-admitted patient, it is well to remember that as yet the nurse knows little about her. Safety is the first essential. To leave the patient alone in the bathroom while the nurse goes for clean underclothing would, of course, be courting disaster. Safety is only ensured by having at hand sufficient assistance to be able to cope with any emergency. The bathing must be carried out quickly.

During the undressing and bathing of the patient, her **body must be examined** and a note made of every peculiarity found. A further and more complete examination should be carried out when the patient is put to bed. The nurse should specially look for—

1. Any signs of injury, such as cuts, bruises, etc. Patients have even been brought to asylums suffering from fractures that have only been found out on examination.
2. Bed-sores, skin diseases, body vermin, etc.
3. Hernia, hæmorrhoids, distended bladder.
4. Evidence of pain, swelling, or tenderness in any part of the body.
5. Any signs of difficulty in breathing—*e.g.*, shortness or shallowness; in cases where there has been struggling before admission, the hand should be passed lightly over the patient's ribs to see if there is any wincing, indicating injury or fracture of ribs. Any sign of injury is to be noted and reported at once to the doctor.

THE SICK-ROOM.

The charge-nurse is the responsible head of the ward in all matters, and she must keep herself perfectly familiar with everything that is going on, not only for the sake of her patients, but in order to be able to make a full report to the doctor. When she goes off duty she must instruct her deputy regarding any new cases, any serious symptoms, or any special nursing. She must know how 'to manage that what you do when you are there shall be done when you are not there.' The junior nurses must report everything unusual, either regarding the patients or the ward, to the charge-nurse.

When the doctor enters the ward, the senior nurse on duty should meet him at once; if she is absent he should be informed, and she should be sent for. At each bed she should stand on the side opposite to him, hand him the patient's chart at once, and be ready to answer his questions. The nurse must always state facts, never matters of opinion. If she cannot answer a question, she should say so.

The nurse's main duties to her patients are to supply their wants as fully as possible; to anticipate their desires and gratify them, unless they are in opposition to the doctor's orders; to keep the ward quiet, and to maintain a cheerful and attentive demeanour to all. The patient who is most seriously ill will demand the most attention, but time must be found to attend to the needs of all. It may be difficult to preserve quiet in an asylum sick-room, but the nurse can, at least, always prevent the noise made by loud conversation, creaking of windows, wearing of noisy boots, banging of doors, etc. She should be considerate as well as cheerful. A patient must not be denied some comfort because he is unable to call for it. All patients must be treated alike; in a spare moment the nurse should see what little attention she can bestow on the most ungrateful. Each patient should receive to the best of her ability the treatment prescribed and the care and attention required.

Care of the Sick-room.—A plentiful supply of fresh air is especially necessary in asylum sick-rooms. Sick patients require more space than those who are going outside every day, and the nurse should keep the doctor well informed of the number of patients in her ward, so that overcrowding is prevented. Open windows are the best ventilators. The direction of the wind should be studied, and the windows of the leeward side should always be kept open. Care must be taken to protect the patients from draughts; this may be done by bed-screens, or, where it is necessary to ventilate the whole ward thoroughly and quickly in inclement weather, by covering for the time being the heads of the patients who require protection.

The **temperature of a sick-room** should be kept as nearly as possible at 58° to 62° F. To maintain this the nurse must carefully study the thermometer which hangs in the ward, and become familiar with the method of heating that is in use.

The **light in a sick-ward** should be as abundant as possible during the day. Direct sunlight must not be allowed to fall on a patient's face; the light can be easily tempered by arranging the window-blinds and the bed-screens. Where gas is used, the nurse must remember that burning gas consumes the oxygen of the air, and therefore more attention must be paid to ventilation. Always, however, there should be plenty of light when she is carrying out any nursing duty; she should see well what she is doing, and turn down the light afterwards. Care must be taken at night to make the light sufficient to allow of observation being carried out without disturbing or irritating any patient.

The nurse's duties include the **cleaning of the sick-room**, the furniture, instruments, etc. The microbes which cause disease are carried with the dust into the chinks and corners of the room. The floors must be frequently cleaned, using as little water as possible, and drying with old cloths. Floors cleaned with wax and turpentine are not to be highly polished, lest the

patients fall and injure themselves. The old wax, which collects much dirt, must be scraped from all the corners. Before dry-rubbing a floor, the nurse must first gather up all the dust; this is best done with a damp flannel cloth pushed about on the head of an ordinary broom. The walls should be cleaned down frequently in the same way. Furniture, beds, etc., must be moved, so that every part of the floor and walls can be got at. When the floor is finished, the chairs, window-sills, cornices, doors, picture-frames, etc., must be gone over with a damp duster. Single rooms and other places where dirty patients may have been require special attention. Scrape away the fæces wherever they have lodged. Do not use deodorizers alone, nor even these until the room has been thoroughly cleaned; some of them merely cloak the smell and deceive the nurse as to the cleanliness of the room.

All soiled sheets, clothing, etc., must be quickly rolled up and taken instantly from the ward. The best place in which to go over soiled clothing and make a list of it is the open air. Sheets and clothing from cases of infectious disease, erysipelas, parasitic skin diseases, etc., should be disinfected as soon as they are taken off, and kept apart afterwards when sent to the laundry. The ward lavatories must be kept clean and well ventilated. Bed-pans and urinals must be removed from the ward at once after being used; they should be cleansed, and finally washed with some disinfectant. In certain cases of offensive disease, deodorizers may be put into the bed-pans before use, with the object of mitigating or overcoming bad smells. Deodorizers include such substances as Sanitas, Jeyes' Fluid, eucalyptus oil, Condy's Fluid, etc. Some of these destroy the smell by chemical action; others cloak it by their own strong odour. All dressings should be burned as soon as they are taken off.

In addition to cleanliness, the nurse must maintain **strict order and neatness** in her ward. Everything should be in its proper place, not only for the sake of tidiness, but in order

that it may always be found when wanted, and that patients cannot get hold of anything with which they might harm themselves or others.

BEDS.

In making a bed, the surface of the mattress must be even; it must be kept from sagging in the middle, and there should be neither lumps nor depressions in it. In all wet and dirty cases, where there are discharging wounds, in cases of paralysis and long-continued illness, etc., the mattress must be protected by a piece of waterproof rubber sheeting. This rubber sheet must be frequently and thoroughly washed with a disinfectant. The mattress is first covered with a sheet; over this is laid the rubber sheet, which should be long enough to reach from the pillow to the patient's knees, and broad enough completely to protect the edges of the mattress. In many cases, particularly with restless patients, in order to ensure the waterproof sheet being kept in position and perfectly flat, it should be fastened down with tapes round the edges of the mattress; in extreme cases the whole mattress may be encased in a waterproof cover. This avoids the danger of the discharges escaping over the edges of the waterproof on to the mattress. On the waterproof is placed the draw-sheet. A **draw-sheet** is an ordinary sheet folded once in its length and large enough to cover the rubber sheeting. Its use is to allow frequent and rapid changing without much moving of the patient. In changing the draw-sheet, the patient, placed on his side, is lifted as near as possible to the edge of the bed. The soiled sheet is then rolled up from its edge inwards as far as the patient's body. The clean sheet, well warmed and aired, is then placed on the side of the bed from which the soiled one has been removed, spread out over the bed, and the spare portion rolled up and placed close to the patient's body. The patient is then lifted on to the clean sheet, the soiled one removed, and the remaining portion of the clean one unrolled, and this and the other side tucked under the mattress. If

the patient cannot be turned on his side for any reason, he should be raised off the bed by one nurse while the other changes the sheet.

In changing the upper sheet, the nurse should remove all the blankets but one, and on this spread the clean sheet. The soiled sheet is then pulled down under cover of the blanket and removed; in the same way the blanket is brought over the top of the clean sheet.

Patients who are continually throwing off the bed-clothes must be carefully watched, as exposure to cold may prove serious. The amount of bed-clothes must depend upon the time of year and the needs of the patient. The lighter the covering the better, provided it is warm enough.

Hot-water bottles should be wrapped in flannel bags, and fixed in position by being put beneath the under sheet. The heat must not be too great, and must be tested by the nurse before the bottles are applied.

The pillows should be frequently shaken up; a fresh, cool pillow is a grateful change to a feverish patient. In lifting patients in bed, the nurse uses one arm to support the back, the other to support the upper part of the thighs; at the same time, if the patient is able, he should put his arm round the nurse's neck. If the patient is heavy, two nurses should do the lifting, to avoid accidents.

Old patients should be propped up in bed with a bed-rest or pillows; continuous lying on the back encourages congestion of the lungs and heart failure.

Great attention must be paid to those patients who get up to the stool, or go to the lavatory, to see that they are properly clad. In changing the patients' beds and waiting upon them, the nurse will do much to encourage the sense of decency in all her patients by a constant use of the bed-screens.

Patients who are very weak, cases of long-continued illness, etc., require air-cushions, **water-beds**, and water-pillows. Water-beds must never be removed to a bathroom to be filled.

They should never be lifted up by the funnel, as they are easily damaged, and they are very expensive. They should be put on the bed exactly in their place before being filled. The water used should be at a temperature of 100° F. Pins should not be used near air or water beds, for fear of puncture.

CLEANSING OF SICK PATIENTS.

The usual method of keeping a sick patient clean is by sponging in bed. Everything must be in readiness before beginning. The bed is first to be covered with a waterproof sheet; over this a blanket is spread. The patient is then placed on the blanket, and another one thrown over him, under cover of which the sponging can be easily done without exposing him. One part of the body at a time is cleansed with tepid water and soap, keeping the other parts covered up. The face should be washed first, then the chest, then the limbs one at a time, and lastly the back. Each part must be thoroughly dried before another part is commenced. Sufficient water to moisten the sponge is all that is required, but the water in the basin must be changed once or twice.

The nails of the hands and feet require careful attention. Special attention must be paid to the hair, as the heads of the sick, and especially of infirm patients, very easily get into a dirty state. The hair should be combed out regularly. For the sake of comfort, a woman's hair should be made up in two plaits, one on each side of the head, and loosely tied. If a female patient's hair requires to be cut off, the doctor's permission must be obtained; in asylums the patient's friends often make a disturbance if this is done without their consent.

Great attention must be paid to keeping clean the lower parts of the patients. In helpless patients these parts should be carefully sponged after using the bed-pan. Dirty patients must be cleaned at once, washed quickly and dried, and, if their condition permits of it, they should have a bath once a day.

A sick patient must not be taken out of bed and placed in a bath without special orders. The utmost care must be taken to prevent the patient catching cold when going to and from the bath. An asylum patient must never be left alone in the bathroom.

In giving a **cleansing bath**, the following rules are to be observed: Turn on the cold water first, and then the hot. When there is sufficient water in the bath, take the temperature with the thermometer, and add hot or cold water till the temperature is 90° F. In mixing the water use the arm, not the thermometer. There is no need to fill the bath very full. A depth of 6 inches is sufficient; this saves time, and allows the nurse to get at every part of the patient's body. Take the temperature again before the patient enters the bath.

The patient must not be taken to the bathroom until everything is in readiness. He must be dressed and undressed as speedily as possible. In lifting helpless patients out of and into the bath, one nurse should grasp the patient under the arms from behind, while another supports the knees. All feeble patients should be assisted in getting into the bath and out of it; in patients who suffer from hernia, the stepping over the edge of the bath often brings down the rupture. In severe cases of rupture a bath truss should be worn.

The mental condition of the patient must be kept in mind; suicidal tendencies, epileptic fits, etc., must be carefully watched for. If a patient shows any symptoms of fainting, or exhibits disturbed breathing, change of colour, etc., he must be immediately lifted out, laid flat on his back, surrounded with blankets, and the doctor must be sent for.

FEEDING OF THE SICK.

Sick patients may get ordinary diet, a modified ordinary diet, or special diet. The diet will in every case be prescribed by the doctor. The nurse's chief duty is to serve

it. In case of special diet, however, she may also have to prepare it. She will always be expected to give the doctor a full report regarding the patient's appetite, the amount of food taken, etc. The matter of feeding is one in which, perhaps more than any other, the doctor is dependent upon the nurse for his information; and as in many cases dieting may be the only method of treatment employed, it is easy to see how important a thing it is.

If a nurse has to give a patient food before getting orders from the doctor, she will always be safe in giving some warm milk. It is a good practice to give each newly-admitted patient a drink of warm milk after he has been bathed and put to bed.

In giving ordinary food, much depends upon the manner in which it is served. The following directions must be followed: "First the patient is made ready for his meal. The clothing and bed-clothes are protected by napkins. Then the patient is propped up with a bed-rest or pillows, and his shoulders covered with a warm wrap. When the food is quite ready and neatly placed on a tray, it is brought to the patient. It is necessary to see that he takes it, care being taken that the meal is eaten before it becomes cold. The nurse should be able to state definitely to the doctor the amount of food taken. In the case of sick patients, food should never be left lying about on the chance of its being taken later on; this may do well enough in a case of simple refusal of food, but is not to be practised on the sick."

When a patient is unable to feed himself, he will usually be on a fluid diet. He must be propped up in bed, and the nurse must take up a comfortable position beside him, so that there will be no tendency to hurry the feeding. He must be fed slowly, small quantities being given at a time. In all spoon-fed cases a dessertspoon must be used, and the nurse must not attempt to give a second spoonful till the previous one has been swallowed.

In many cases the nature of the patient's illness prevents his taking much food at one time. Food may even be ordered

to be given in very small quantities every hour. The nurse should always ask in such cases if the patient is to be wakened in order to be fed.

Some patients require very special attention at meals. These include senile patients, imbeciles, epileptics, and general paralytics, who are inclined to **bolt their food**, and usually to eat too much; and depressed patients who eat too little and resort to every device to pretend that they have eaten enough. If these patients are in bed, it is not difficult to attend to them, but if they are sitting at table they must be carefully watched. General paralytics and all helpless patients ought to be fed with soft food. Meat should be minced, crusts taken off the bread, etc. For spoon-fed patients all bread must be thoroughly soaked in milk or tea.

When the ordinary food is not to be given, the doctor will draw up a diet-sheet for the patient. This must be strictly adhered to. In most cases a record of the amount taken is to be carefully kept.

In many diseases the diet consists entirely of **milk**. Milk contains all the food materials necessary for life, and, as it contains also plenty of water, it forms a complete food in itself. Its objections are that many patients dislike it, and that it tends to form lumps in the stomach which are not easily digested. These difficulties are usually easily got over. It can be given in many forms, and the nurse should have a knowledge of the different methods of preparing these. All sick-rooms have necessarily a large supply of milk in stock, and the nurse must find out the best method of keeping it fresh and free from germs.

In many diseases of the stomach the doctor may require the food to be predigested. This can be done either by peptonizing powders or liquor pancreaticus—one powder or one teaspoonful of the liquor to a pint of milk. Cold milk may be peptonized, and after it is swallowed the peptonizing action goes on in the stomach. It is usual to heat the milk to blood-heat, then add the powder, and let the action go on for twenty

minutes before giving the milk. It is well not to prepare peptonized milk too long before it is needed, unless it can be put on ice to prevent it becoming sour.

Cold milk should be given in small quantity, very slowly, and repeated as often as necessary. The curdling of milk in the stomach may be avoided by mixing it with lime-water, a tablespoonful to 6 ounces of milk, or the milk may be well diluted with boiling water. Boiled milk does not curdle easily. Buttermilk, curds, etc., are very digestible forms in which to give milk. The whey which separates from the curd is very nutritious, and may be given by itself or mixed with wine, white of egg, etc.

In preparing hot milk and the various foods of which milk is the basis, it is important to use absolutely clean saucepans and dishes.

In diarrhœa and other diseases it is necessary to give milk that is quite free from germs. Formerly this was done by sterilizing the milk—that is, bringing it to boiling-point, a temperature of 212° F. Lately it has been discovered that boiling affects the digestibility of the milk, and that the germs of disease can be destroyed at a much lower temperature. Pasteurizing the milk, as it is called, consists in standing a flask of milk in water over the fire till the temperature of the milk is 150° F. It is kept at this temperature for half an hour, and then cooled by immersing the flask in cold water. The flask must previously have been sterilized by boiling, and during the preparation the neck is closed with a plug of sterilized wool.

Eggs form a valuable addition to sick diet. The most usual form is the egg and milk custard, used largely in asylums as a sick diet, and also as an addition to the ordinary diet for convalescents. There is no form of food that can become more distasteful than eggs, but, as it is a useful food, the nurse should find out in what ways she can make it agreeable. The white of egg mixed with water (three eggs to the pint), called 'albumen water,' is a useful form of fluid food.

It is most important to pay attention to the quantity of fluid taken by a patient. In fevers, kidney disease, etc., it is often necessary to supplement the fluid in the food by giving largely of various drinks. Water is the best of them, and nothing is more gratefully received by the patient usually, but caution must be exercised in giving it, and the doctor's orders followed. When it is inadvisable to allow a patient water to drink, thirst may often be relieved by thoroughly washing out the mouth with tepid water. Ice is sometimes given, but it tends to increase the thirst afterwards. Cold water should be given in sips. In giving a helpless patient a drink or in feeding him with a feeding-cup, the nurse should slightly raise his head and shoulders by putting her hand under his pillow. Refreshing drinks may be made by the addition of various fruit-juices to water. The best of these is the ordinary lemon water, made by pouring boiling water on freshly-cut lemons, sweetening the liquid, and letting it cool. In typhoid fever, etc., the patient may be encouraged to drink large quantities of this.

The various patent preparations and predigested foods may be used according to the doctor's prescription. Beef-tea and jellies are largely given to sick patients, but it cannot be too strongly pointed out that they are really stimulants, and not foods. They are very grateful and comforting to the patient, but the nurse must be careful never to look upon them as part of the diet.

The following are some methods of preparing **beef-tea**:

1. One pound of lean beef free from fat is taken and cut up into small pieces. These are then put in a pan and covered with 1 pint of cold water, half a teaspoonful of salt being added. The whole is heated over a slow fire until the meat changes colour, say for half an hour, without being allowed to boil.

2. One pound of lean beef is scraped or shredded, and put into a stoneware jar with a tightly fitting lid. The beef is covered with 1 pint of cold water, and half a tea-

spoonful of salt added. After standing for ten minutes the jar is placed in a saucepan half full of boiling water and boiled for sixty minutes.

3. Raw beef-tea may be made by taking 2 ounces of lean beef, two tablespoonfuls of cold water, and quarter of a teaspoonful of salt; scraping or shredding the beef, sprinkling salt over it and covering with the water. After standing for ten minutes the tea is stirred well and poured off.

In some cases the patient may not be able to take food by the mouth, and has then to be **fed by the rectum**. In such a case the food must be fluid, and usually consists of eggs, milk, beef-tea, brandy, etc. The eggs and milk are usually predigested, although there are differences of opinion as to whether this is necessary. The doctor will give orders as to the composition of the nutrient. The fluid should be as well mixed as possible, strained through a sieve, and given at the temperature of the body. In order to give the nutrient the best possible chance of being absorbed by the wall of the intestine, the rectum must be repeatedly cleared out. Not only must an ordinary enema be given occasionally, but the rectum should be washed out once a day, an hour before giving a nutrient, with 1 or 2 pints of warm water. The nurse must ascertain if the rectum is empty before giving the nutrient. A nutrient enema is given in a small quantity, usually 2 to 4 ounces, and everything must be done to get the patient to retain it. It is best to use a ball syringe. The following rules are to be observed in giving the nutrient. The patient should lie on the left side, with the knees drawn up and the buttocks raised by means of a pillow. The nozzle of the syringe is oiled and inserted carefully; the enema is given slowly, and after withdrawing the syringe the buttocks pressed together, and the patient made to lie perfectly still for twenty minutes. If the patient cannot be turned on his side, the hips should be raised considerably. In cases of irritable rectum, the retention of the nutrient may be assisted by pressing a pad of warmed flannel against the anus for some minutes.

Rectal feeding may be administered in the form of nutrient suppositories. These are small cone-shaped bodies consisting of some fatty substance mixed with beef-extracts, etc. The requisite number are carefully and slowly introduced into the bowel for a distance of 2 inches. The fatty substance slowly melts, allowing gradual absorption of the nutrient material.

Artificial feeding, or **feeding by means of a tube** passed into the gullet, may be done either by the ordinary tube passed by the mouth or the nasal tube. The advantages of the nasal tube are that it obviates the use of the gag, and tends to lessen the struggling. Because of its small size, however, it tends more readily to pass into the trachea, and it is not suited for giving scraped meat, vegetable soups, etc., which may sometimes be given as well as the ordinary milk and eggs. In asylums, the usual rule is that no apparatus for tube feeding is to be used by any other than a medical officer. In home care, the nurse may sometimes use the tube, but only under a special medical order. When a patient has to be forcibly fed, everything must be got ready before the feeding is begun. The nurse must provide the following: The tube, with funnel attached; some oil or other substance to lubricate the tube; a gag, the points of which are to be covered with wool or tape to protect the patient's mouth and afford a better grip; a feeding-cup, with warm water; a basin to receive the tube in after feeding; and the food, which must be at a temperature of 98·4° F. Medicines have sometimes to be given by the tube. It is well to remember that castor-oil will go down the tube quite readily if it is heated.

Washing out the stomach is often done along with tube-feeding, and, by using a longer tube, the two operations can be performed easily together. The nurse must provide a liberal supply of water which has been boiled and allowed to cool to a temperature of 98·4° F.

All articles of diet that are brought in by the friends must be taken in charge by the nurse, and must only be given to the patient with the doctor's sanction.

KEEPING OF CHARTS, RECORDS, ETC.

The most important thing to remember in the keeping of records is that the proper time to put anything down in writing is the moment it is ascertained. Loose notes of a temperature, for example, should never be kept with the intention of putting them up on the chart when there is more time. Charts should be kept neatly and accurately. Charts are used to record the amount of food taken, the amount of sleep, the medicines, the number of fits, etc.; and many other points may have to be noted, according to the nature of the disease. In most cases of illness, there are certain facts that have to be recorded at regular intervals, and these are kept on a chart that hangs by the patient's bedside. In every case this should contain a note of: (1) the temperature; (2) the pulse; (3) the respiration; (4) the urine; (5) the motions; (6) the treatment, medicines, etc.; (7) the day of the illness; (8) any unusual occurrences, such as the spitting of blood, vomiting, appearance of a rash, etc.

The average normal **temperature** of the human body is 98·4° F. The temperature even in healthy persons shows slight variations, according to the time of day, the age of the patient, etc. The temperature of a patient is usually taken by placing a thermometer in the armpit. It may also be taken in the mouth or rectum. In the case of the insane, the method of taking in the mouth should never be used, but in certain cases it may be permissible to take it in the rectum. The temperature in the rectum is usually half to one degree higher than when taken elsewhere.

In taking the temperature, the column of mercury should be gently shaken down towards the bulb till the top of it stands at 95° F. These instruments are easily broken. The skin of the armpit must be carefully wiped dry of all perspiration. The thermometer is to be placed against the skin with its bulb in the centre of the armpit; the patient's arm is then drawn forward across the chest, and held close to

the body, or the patient may, if he can, support it with his other arm. No clothing must get between the skin and the bulb of the thermometer. The patient should then be covered up with the bed-clothes. It is absolutely useless to attempt to take the temperature by holding the thermometer in position. The nurse must not leave the patient's side while the temperature is being taken. The ordinary clinical thermometer should be kept in place for the requisite time, varying from two to ten minutes, according to the make of the instrument. Some thermometers, being more delicately constructed than others, record a rise in temperature very quickly, even in thirty seconds; but for accuracy even the most delicate of these should be kept in place for two minutes. Slight rises in temperature, amounting to parts of a degree, may not be detected unless this is done. A note of the temperature must be taken on the chart or elsewhere as soon as it is ascertained. It is well to note that the thermometer may after a time cease to record accurately on account of changes in the instrument, and the nurse should take the trouble occasionally to compare an old thermometer with a reliable one.

It is unwise to let the patient know the changes in his temperature. The temperature of many of the insane is persistently below the normal. In bodily diseases a distinct fall below the normal is usually of more serious import than a corresponding, or even greater, rise above the normal. A sudden fall below the normal occurs in collapse and from other causes, and calls for the immediate administration of hot applications and stimulants.

Temperature charts usually contain only a record of the morning and evening temperatures, but very often it is necessary to take a record every six or every four hours, sometimes it may be every hour. A well-kept and clearly-printed temperature chart which can be taken in at a glance is a great assistance to the doctor. A glance at it may help him to determine a change of diet, the removal of a dressing,

etc., and in many of the insane the temperature record may be the only thing he has to guide him in following the progress of the illness.

In private nursing the nurse may do something to reduce the fever until the arrival of the doctor. The patient should be put on a light diet, supplied with light bed-clothes, and have his body sponged at intervals with tepid water. In the *cold* stage of a *rigor* (p. 72) the patient should be put to bed and made warm with hot-water bottles, and he may have warm drinks.

The Pulse.—With every beat of the heart a wave of blood passes through all the arteries of the body, and where an artery is near the surface of the body this wave can be seen and felt, and is called the pulse-wave. The pulse is usually felt at the wrist over the radial artery, but it may also be felt over the temporal artery in front of the ear, over the carotid artery at the side of the neck, etc. Feeling the pulse is performed by placing the index and middle fingers of the right hand over the radial artery, which is to be found running down the thumb side of the patient's wrist in front. As there are occasionally variations in the position of the arteries, the nurse failing to find the pulse in one wrist should try the other. The points to be noted about the pulse are—(1) The frequency; (2) the regularity; (3) the fulness.

The Frequency.—The average rate of the pulse in a healthy adult is seventy beats a minute for a man, and eighty for a woman. The rate may be faster or slower than the normal. It is slower even in a normal person when he lies down than when he stands up. It may be increased in excitement, or even by slight exertion, so that the nurse must wait a little till such cases have rested or calmed down, lest the rate taken may not be the correct one. In fevers the pulse-rate is increased, and may rise as high as 140 a minute. In counting the number of beats (for one minute at least), the patient's hand should lie flat on the bed.

The Regularity.—The normal pulse beats steadily, with

exactly the same number of beats in each succeeding minute, and with exactly the same interval of time between each beat. In disease the pulse may beat faster one minute than the next, the interval between the beats may vary, or a few rapid beats may be followed by a few slower ones. Sometimes a beat is missed, in which case the pulse is said to be 'intermittent.'

The Fulness.—If the pulse is felt over a large area of the nurse's finger, and it requires much pressure to obliterate the pulsations, it is spoken of as 'strong' or 'full.' If the pulsations are weak, and can be easily obliterated by pressure of the fingers, it is said to be 'soft' or 'feeble.'

The Respirations.—As a rule, a healthy adult breathes from fifteen to eighteen times a minute. In counting the respirations, it is important to note that the patient should not be aware of what is being done. The respirations may be counted by watching the movements of the chest; this can usually be done without moving the clothing. Each rise and fall of the chest together make one respiration. If necessary, the respirations can be counted by laying the hand upon the chest or abdomen.

In disease the points to be noted are whether the breathing is regular and steady, or irregular, jerky or panting; whether the respirations are deep or shallow; whether there is any pain on breathing, and, if so, whether the pain is at any particular stage of the breathing, and especially if it is worse when the patient takes a deep breath; and whether any change takes place in the character of the breathing when the patient falls asleep.

NOTING OF SYMPTOMS AND TREATMENT OF SPECIAL CASES.

The evidences of disease are divided into—

1. *Symptoms*—that is to say, something complained of by the patient, such as pain, sickness, giddiness, etc.

2. *Signs*—that is to say, something noted by the nurse or

doctor, such as swelling, irregular pulse, disturbed breathing, etc.

These symptoms and signs have been dealt with at length in other sections of the handbook.

In dealing with the insane, it is very often impossible—*e.g.*, in acute cases and in dements—to get a single hint as to symptoms, and so it is important that the nurse should keep her eyes open for every sign that will help in diagnosing the patient's disease and treating it. She should, moreover, cultivate the habit of entering in a notebook the important signs which she observes. It is very good practice to write up the history of a case of illness completely. A good rule is to report any deviation from the usual or normal, no matter what its nature is.

General Symptoms.

Sleep.—To obtain a proper amount of sleep is necessary in every illness, and especially when dealing with a nervous or insane person. It is difficult to teach grown-up people new habits of sleep, and it is therefore important that the nurse in attendance upon the insane sick should endeavour to find out how she may get the patient into the best possible conditions for obtaining natural sleep. The nervous patient may not sleep well in a dormitory, and may do well in a single room, with the observation neeessary to his mental condition.

Note (1) the exact number of hours the patient sleeps; (2) whether the sleep is peaceful or disturbed, light or deep.

Many nervous patients are such light sleepers that they waken with the very slightest disturbance, and give the nurse who visits them the impression of never having slept at all.

The observant nurse will find out many ways of obtaining sleep for her patient, without having recourse to hypnotics or sleeping-draughts. Restless patients and those who have poor circulations will often sleep if they are given a hot bath. Hot bottles, sleeping-socks, etc., may be useful. Sleep is said by some to be partly the result of an anæmia of the brain, and there

are many ways in which temporary anæmia may be induced. A hot bath will draw blood from the brain by dilating the capillaries in the skin; a meal or a hot drink, by drawing more blood to the digestive organs, will have the same effect. Exercise in the open air may be tried. A change of bed, or a change of room may be all that is necessary. No patient will sleep in an uncomfortable bed. Some patients may have a smoke before lying down, some may be benefited by reading or being read to, and there is nothing to prevent a nurse, if it is possible, employing the nursery method of singing her patient to sleep. General massage in the evening may be useful in some cases. Gentle downward stroking and friction from the occiput to the side of the neck, gentle stroking of the hair or brushing it for a prolonged period in a uniform way are recommended.

The points to be observed in giving sleeping-draughts are:

1. The exact dose must be given at the specified time.
2. The time that elapses before the patient falls asleep must be noted.
3. Any mental or bodily effects the drug may have before it produces sleep must be noted.
4. The exact number of hours the sleep lasts must be noted.
5. The character of the sleep, whether disturbed by dreams or restlessness, whether deep or light, must be noted.
6. When the draught has no effect, a second dose must not be given without orders to that effect.
7. If the hypnotic produces any unusual after-effects, such as prolonged drowsiness; digestive derangement, such as sickness or constipation; changes in the appearance of the urine; headache, involuntary twitchings, etc., a note must be made.

Although hypnotic drugs are of great value in medical treatment, nurses will frequently help their patients very materially by endeavouring to induce them to struggle on without having recourse to drugs of this kind. When the physician withholds them or orders their discontinuance, he

should be loyally supported by the nurse, although it is probable that this may for a time add to the difficulties of nursing and result in much extra work.

So much injury is done by the unauthorized use of sedative drugs, headache powders, and pain-killers, that the nurse should entirely discountenance their use. It cannot be too strongly impressed upon all concerned, nurses as well as patients, that no sedatives should be taken or administered without express medical sanction and written directions for their use.

Posture, Attitude, and Expression.—Note carefully the patient's position in bed. A patient with abdominal pain usually keeps the knees drawn up. Find out if the patient is more comfortable in one position than another, and change him accordingly. Any great variation from the normal position should be noted; in children this might indicate the fact of a fit having occurred.

Expression of the face often indicates pain when there is no other sign of it. The presence of flushing must be noted, and whether it is general or confined to one spot on the cheeks—the hectic flush. In lung diseases, in apoplexy and epilepsy, the colour of the face varies from dark red to purple black, and indicates that the blood is not being properly purified in the lungs. Excessive pallor of the face occurs in sickness, collapse due to poisoning, etc.

Pain.—Every complaint of pain must be reported; as also whether it is diffuse or confined to one spot. If the patient complains or shrinks when the painful spot is touched the fact should be noted; as also the character of the pain, whether dull and aching or sharp and stabbing or throbbing, and if it becomes worse on movement. If the pain is in the chest, the nurse should observe if the patient is breathing naturally, and if the pain is increased during deep inspiration; if it is abdominal pain, it is relieved or increased on pressing the abdomen with the hand.

The **skin** must be examined for—

1. The condition, whether moist or dry. If there is profuse

perspiration, whether excessive at night. Anything peculiar about the odour of the sweat.

2. The presence of bruises, cuts, or swellings.

3. The presence of body parasites or infectious skin diseases.

4. The presence of undue redness or bed-sores, blisters, or blebs.

Every opportunity should be taken to look for these, and their presence should be at once reported.

If there are any *bruises* or *cuts*, inquiries should at once be made as to how they were sustained. A tiny bruise on the face may be a trifling matter, but it may indicate that a patient has had his first epileptic fit, or that he has fallen out of bed unknown to the nurse, or that he has had an attack of giddiness; and so, to the observant nurse, it may be a timely warning that will prevent something more serious happening on a future occasion.

The presence of *eruptions* or *rashes* is most important. The rash may be an indication of an infectious fever; the eruption may be an infectious skin disease.

Most important is the immediate detection of parasitic skin diseases, such as *scabies* or *the itch*, etc. In scabies it is not only necessary to rid the patient of the disease, but to prevent its spread, and a neglected or unreported case may in a short time infect a whole ward. These skin parasites breathe through pores in their bodies, and the principle of the treatment is to smear the patient's skin with a fatty ointment, usually sulphur ointment, which is applied at night and washed off in a daily bath of soap and hot water in the morning. Scabies usually appears in the web between the fingers, but may begin at other parts.

The parasite (*Pediculus capitis*) that infests the hair is a constant source of trouble in the insane, and the nurse has often a trying task in keeping her patients clean in this respect. The parasite itself is usually easily detected and got rid of, but the difficulty is with the eggs, or nits, which cling to the hairs. The treatment prescribed, usually the application of a

lotion to the hairs, must be industriously carried out regularly —for some weeks in cases.

Skin eruptions include eczema, psoriasis, acne, erysipelas, etc. Many of the ointments used in treating them are highly poisonous, a fact to be carefully borne in mind.

Bed-sores.—Although bed-sores are in nearly every case a sign of bad nursing, it must be admitted that there are many cases, especially in asylums, where they develop in spite of the most careful tending. In general paralytics and old people the nutrition of the skin is often so bad that it easily tends to break down.

The chief causes of bed-sores are:

1. Interference with the circulation of those parts of the skin which are subject to constant pressure. The skin, therefore, tends to break down at those parts where it is pressed between the bed and the bony prominences—*e.g.*, over the sacrum, the hip-joints, and the heels. Patients who lie in bed with knees drawn up may get a bed-sore where one knee lies against the other.

2. Irregularities in the sheet, presence of bread-crumbs and other irritating matter.

3. Want of cleanliness.

It must be kept in mind that skin eruptions may occur at the common sites of bed-sores, and must be reported, so that their appearance or results may not be put down to want of attention or bad nursing.

The nurse must always be on the outlook for indications of the oncoming of a bed-sore. The first appearance of reddening or tenderness of the skin should be reported to the doctor.

The *prevention* of bed-sores is most important, for in many patients, when once formed, they are most difficult to heal. The main points to be attended to are that the nurse should:

1. Change the position of the patient frequently.

2. Use water-beds or air-cushions where necessary.

3. Keep the under-sheet smooth and free from bread-crumbs, etc.

4. Examine every part of the patient's skin daily.

5. Change wet patients at once.

6. Sponge the parts where there is any pressure, several times a day if necessary. Moisten them with spirit lotion (1 part rectified spirit in 8 parts of water), dry them carefully, and dust them with powder. Do not use ointments, except under medical orders.

Rings of cotton-wool are sometimes used to remove pressure from certain parts. If the patient wets the rings, they are worse than useless. It is better to use a rubber ring cushion placed under the sheet.

The *treatment* of bed-sores is the same as the treatment of wounds generally. The parts must be kept scrupulously clean. The lotions applied are usually stimulating, in view of the loss of tone in the parts and the difficulty of getting healing.

Swellings may be due to inflammation, abscesses, tumours, dropsy, and injuries.

Inflammatory swellings and abscesses can be distinguished by the presence of the characteristic signs of pain, heat, and redness. *Dropsy* is the accumulation of fluid in the loose tissue under the skin, and occurs in heart and kidney diseases. It appears chiefly in the legs and under the eyes. It can be distinguished by the fact that if the finger is pressed on the swelling, a depression forms which does not fill up for some time after the finger is removed. This is called *pitting on pressure*.

Circulatory System.—The points to be noted in cases of heart disease are:

1. The condition of the pulse.

2. Signs of difficulty in breathing, changes in the colour of the face, dropsy, pain in the chest, and faintness.

The treatment of heart cases, as far as the nurse is concerned, has chiefly to do with guarding against attacks of syncope, by preventing the patient from doing anything in a hurry, indulging in large meals, getting into discussions or indulging in anything that tends to excite him. When any

untoward symptom occurs, the patient should be put into a horizontal position at once.

Respiratory System.—*Cough.*—The nurse should note the frequency, whether it comes on at particular times, and whether it keeps the patient awake; the character, and whether it is slight or severe, dry or accompanied by spit.

The Sputum or Spit.—The nurse should note whether clear or opaque, frothy or watery; whether it has any smell; note the quantity expectorated at one time and during the whole day. The spit may contain pus or blood. If it contains anything unusual, a sample should be kept for the doctor to see. If blood, the nurse should note whether it comes up in clots or streaked over the spit; whether it is dark, 'rusty,' as in pneumonia, or bright red. When blood appears in any quantity, it is necessary to find out if it is coughed up or vomited. Spitting of blood is always a serious matter, and at its first appearance the doctor should be summoned. Meanwhile the nurse must prevent the patient from exerting himself in any way.

The Alimentary Tract.—The odour of the *breath* should be noted.

The nurse should also note the state of the *tongue* and the *teeth;* a furred tongue indicates indigestion, often constipation, and is present in fevers, etc. In cases of severe fever, a crust called 'sordes' forms on the lips and teeth. It may be prevented by washing the mouth several times a day with tepid water. If it forms, it may be removed by carefully sponging with boroglyceride or a solution of borax.

Sickness and *vomiting* must be at once reported. It is most important that the vomited matter should be kep for the doctor's inspection. The nurse should note if there is pain before, during, or after the vomiting. If there is *blood* in the vomit, she should also note the colour of it at the time it is vomited, and whether it comes in clots or streaked over the surface of the vomit.

Appetite.—The refusal of even one meal must be reported.

Refusal of food may indicate—

1. The oncoming of a serious illness, such as pneumonia.
2. Merely indigestion.
3. Some mental peculiarity. In an idiot, for example, it might be merely a sign of bad temper; but in others it may indicate the presence of delusions of poisoning, hallucinations of hearing, or intention to starve to death.

The exact amount of each article of diet, and the exact hours at which they are taken, are to be written down at once in every case in which a written report is required by the doctor. The mode of swallowing and chewing is important. General paralytics may develop paralysis of the muscles of swallowing very early in the disease, and they must be put on soft food in time. The nurse should note the effect of the food—if it causes pain; at what time, whether immediately after the food or some hours later. In some cases of indigestion, pain is relieved by taking food. The nurse should keep a note of the amount of liquid taken. Thirst requires careful attention.

The Bowels.—The nurse should note—(1) How often moved. (2) At what times. (3) The quantity and character of the stools—whether copious or scanty, natural, costive, formed or watery. It must be impressed upon the nurse that even copious stools do not necessarily mean that the bowels are cleared out after long constipation. In such cases a large proportion of lumps of fæces must be seen, and the passage of these must have ceased before she is satisfied that the bowel is clear. In all cases where the condition is doubtful, or where a complete examination of the fæces is necessary, a closed stool must be used instead of the latrine. If the fæces are of an unusual colour, keep them for the doctor to see. Blood may be present in large quantities when the stools are black and of a tarry consistence; or it may be present unchanged, and streaked over the stools. (4) Any signs of prolonged pressure, such as facets or markings of the gut on the fæcal masses. (5) The presence of pebbles or foreign bodies (often swallowed by the insane),

worms, etc. These also should be kept for the doctor. (6) The patient's habits at stool. (7) Occurrence of pain when at stool. (8) The effects of purgative medicines, whether they cause pain, sickness, etc.

The most commonly used *enema* is that given to empty the bowel where there is constipation, or where it is not advisable to give purgatives by the mouth. The syringe used must have the point disinfected; it is then oiled and passed gently in a backward direction for 2 or 3 inches into the bowel. The patient lies on the left side, with the knees drawn up. The syringe must be filled before introducing the nozzle, so that no air may be injected. The fluid injected usually consists of a solution of ordinary soap in water at a temperature of 90°. The bulb must be squeezed very slowly, and the injection stopped the moment there is any evidence that the patient suffers pain or cannot retain any more. After giving the required quantity gradually and gently, the nurse should withdraw the tube and encourage the patient to retain the fluid for ten or fifteen minutes. To assist this, the buttocks may be pressed together, or a folded towel pressed against the anus.

Some newly-admitted patients are so constipated that, in a few cases, it is the nurse's trying duty to scoop the fæces from the rectum before an enema can be given. In doing this the finger should be protected by a rubber stall; any instrument must only be used by the doctor.

Many patients suffer from *hæmorrhoids* or piles, which are varicose veins either inside or just outside the rectum. They sometimes bleed, especially when the patient becomes constipated. Enemata have often to be given to keep the rectum clear and keep down the congestion of the hæmorrhoids which leads to the bleeding. In giving these enemata the nurse should be careful not to hurt the patient. It is sometimes necessary to give a morphia suppository, or swab the part with a solution of cocaine, before the patient can bear the introduction of the enema tube.

The Urine.—Note (1) the manner of passing—whether easily or with pain. Pain may occur before, during, or after micturition. The character and site of the pain must be noted.

(2) The quantity. The normal daily quantity is about 50 ounces. This quantity varies under certain conditions. The nurse must be careful to inform the doctor of the amount of fluid taken by the patient during the twenty-four hours, the amount of exercise, etc.

The quantity is *diminished* in fevers, especially where there is profuse sweating, in heart and kidney disease, and in severe diarrhœa. The quantity is *increased* in hysteria, diabetes, and in early kidney disease. The urine may be entirely *suppressed*—that is to say, none is excreted by the kidneys; this occurs in Bright's disease, and sometimes in acute fevers. Suppression may also be caused by certain drugs.

The quantity passed does not always indicate the amount excreted by the kidneys, for the bladder may be full and gradually distending, and yet the quantity passed may be very small. This occurs in cases where the passage is obstructed, such as in stricture, stone, and tumour. The bladder may be unable to expel the urine, though it is full and distending. It cannot be too strongly impressed upon nurses that, in general paralyties, the constant dribbling away of urine is often only the overflow of an already full bladder. Continual examination of the abdomen is necessary in such cases, and any swelling over the region of the bladder should be at once reported.

(3) The frequency of passing—whether it is passed in large quantities once or twice a day, or in small quantities at frequent intervals; whether it is continually dribbling away.

(4) The colour. It may be very pale, as in diabetes, or very dark, as in fevers.

(5) The contents. These may include mucus, gravel, pus, blood, etc.

(6) The odour of the urine when passed.

Night-nurses should report anything unusual regarding the

passing of urine, such as frequent micturition during the night, or cases where the patient has to rise very early to pass urine.

Urine which is to be examined by the doctor must be collected in an absolutely clean glass, preferably boiled before receiving the urine. The specimen should be taken from the mixed urine collected for twenty-four hours. If this cannot be obtained, a sample of the morning urine should be taken. In collecting it, throw away what is passed at a certain hour, and collect all that is passed up to the corresponding hour next day. The specimen glass must be covered, and stood in a cool place, with a label attached bearing the patient's name and the date.

The urine has sometimes to be drawn off by the **catheter.** In using a catheter the first essential is *cleanliness.* Catheters are of three kinds—silver, soft rubber, and gum elastic. The last cannot be boiled, and is therefore not often used.

The following instructions are applicable to catheterizing both sexes.

The conditions that call for the use of a catheter in the male sex are usually of a more serious nature than in the female, and although male nurses have to use the catheter in private cases, and command better posts if they are qualified to do so, the operations here described are usually to be done in asylums only by the doctor or under his supervision.

In catheterizing a patient see what you are doing. Boil the catheter, and bring it to the bed in a basin of boiled water. Wash your hands thoroughly before beginning. Clean the patient's private parts carefully with soap and water and boracic lotion. Lubricate the catheter with sterilized oil, and introduce it carefully, very gently, and without force. If it meets with any obstruction, withdraw it and try again. Wash the parts after withdrawing the catheter. Clean the catheter by letting a stream of water run through it from the eye end, boil it, and dry it thoroughly. Rubber catheters should be hung up to dry, then placed straight out in a box; if they

are curled up they get tiny eraeks in them, whieh may cause irritation during their passage. If eatheters are boiled before being used, there is no need to put them away in any solution. Carbolic acid destroys all rubber.

In some patients the passage of a catheter, espeeially for the first time, produces much pain for some time afterwards. This may require hot fomentations over the parts. In some cases there is evidence of slight shoek, manifested in a rise of temperature—the 'catheter fever.' The main danger following the use of the catheter is the produetion of cystitis, or inflammation of the bladder, going on sometimes to sepsis, and this can only be avoided by thorough attention to cleansing the parts and sterilizing the eatheters.

Nervous System.—The symptoms that require to be looked for are :

1. Squinting.

2. The condition of the pupils, whether dilated, very contracted, irregular in outline, or insensitive to light.

3. Evidenees of weakness or paralysis in the muscles. In faeial paralysis there is loss of movement and expression on the affeeted side of the face, drawing of the mouth to the sound side, ete.

4. Involuntary movements, such as twitchings of certain muscles, shaking of the limbs, etc.; spasm of the muscles, sueh as occurs in the muscles of the jaw in tetanus. In cerebro-spinal fever and tetanus the muscles of the back become so rigid that the back is bent, and the patient rests on the head and heels when in bed, a condition called 'opisthotonos.'

5. Oeeurrence of pain. Lightning pains in the legs occur in locomotor ataxia. When the patient complains of severe and repeated headaches, the nurse must find out what part of the head they occur in—whether frontal or occipital, etc.

ANTISEPTICS IN COMMON USE.

Name of Antiseptic.	*How Used.*	*Advantages.*	*Disadvantages.*	*Symptoms of Poisoning.*
Carbolic Acid ...	1. In solution (*a*) One part to 20 of water to clean foul wounds, to wash the unbroken skin, and for instruments (*b*) One part to 40 of water to syringe wounds 2. Oily solution, 1 in 10, to soak lint for wounds 3. Carbolic gauze	1. Does not damage steel instruments 2. Is a powerful antiseptic 3. It combines with some greasy material on the outside of the skin, and so thoroughly cleanses it	1. It is poisonous 2. If too strong or used for a long time it numbs the operator's hands 3. It is an irritant to the wound 4. It cannot be used to wash out cavities, such as the mouth	1. Alteration of the urine, which changes in colour from olive green to black 2. Severe vomiting 3. If the dose has been large, collapse and insensibility
Perchloride of Mercury Corrosive Sublimate	1. In solution (*a*) One part in 2,000 of water to wash unbroken skin (*b*) One part in 5,000 of water to wash wounds 2. As sal alembroth (blue wool) 3. As cyanide gauze (mauve)	1. It is the most powerful antiseptic we have 2. It can be carried in the solid form and mixed with the water as required	1. It is very poisonous 2. It blackens all steel instruments 3. The blue wool sometimes causes an eruption round the wound 4. It cannot generally be used to syringe out any cavity (mouth, etc.) of the body	1. Pain in abdomen, with diarrhœa and blood in the motions 2. Collapse and death 3. If slowly absorbed from blue wool or some other way, the gums become soft and spongy and bleed easily, and if not stopped the teeth fall out

	putting about two tablespoonfuls of powder into 1 pint of hot water 2. As boric lint (dyed pink) 3. The powder to dust on wounds 4. As glycerine of borax 5. As ointment	be used to wash out any cavity of the body 2. It does not irritate a wound	2. It cakes on a wound, and hence should be applied between layers of gauze	
Iodoform ...	1. In small yellow crystals or powder to dust on a wound 2. Iodoform wool and gauze (yellow) 3. Iodoform ointment	1. It disinfects a foul wound 2. It is very useful for wounds of the mouth, as it prevents any smell	1. Its disagreeable smell 2. It is expensive 3. It readily produces symptoms of poisoning in some people	1. Rise of temperature often as high as 104°. 2. Everything tasting of iodoform 3. Vomiting and loss of flesh 4. In children drowsiness
Permanganate of Potassium, or Condy's Fluid	As a pale pink solution	1. It destroys all foul smells, and hence is used to wash foul wounds 2. It is not poisonous in a weak solution	If too strong, it stains everything brown	Not poisonous if used in a weak solution
Chinosol ...	1. In solution about 20 grains of chinosol to 1 pint of water, making a solution of 1 in 480 2. May be dusted as a powder on a foul wound	Non-poisonous, non-corrosive, and easily dissolved in water. Does not stain, and has a pleasant odour. A powerful antiseptic, disinfectant and deodorant		

ANTISEPSIS AND ASEPSIS.

There are certain substances called **antiseptics** or **disinfectants** which have the power of killing germs, and they are made use of largely in preventing infection. They must not be confounded with *deodorants*, which are used to destroy smells that arise from putrefaction and suppuration, but have not the power of killing germs.

Heat is the best antiseptic, and is used wherever possible. *Sterilizing* instruments by boiling, disinfecting clothes in a hot chamber, etc., are simply methods of employing heat to kill germs. The antiseptics in common use are solutions of chemical substances in water. The best are :

Carbolic acid; corrosive sublimate or perchloride of mercury; boracic acid; formalin; Condy's Fluid; lysol; chinosol; chloride of lime; patent preparations such as Jeyes' Fluid, Izal, Sanitas, etc.

These antiseptics are used —

1. To destroy the germs in the secretions and discharges of the patient suffering from the infectious disease. In typhoid fever they are added to the stools and urine, which are loaded with the typhoid germs. In consumption they are added to the sputum. In diphtheria and scarlet fever they are used to kill the germs in the secretions from the nostrils and throat. In erysipelas and abscesses they are applied to the parts affected.

2. To destroy the germs in everything that has come in contact with the patient. The bed and body clothes of all patients have to be disinfected. The dishes used by them, the thermometer, the bedside utensils, etc., have also to be similarly treated.

3. To kill the germs that have found their way into the air around the patient, and lodged in the crevices of the rooms, in the furniture, and especially in the dust.

General Rules for the Treatment of all Infectious Diseases. —1. When a patient suffers from an infectious disease he may

convey the infection directly to another, and therefore he is to be isolated as long as the disease lasts, and put in charge of special nurses.

2. As soon as a case is discovered, the bed and body clothes are to be removed and disinfected. They should be placed in a bath of 1 in 20 carbolic solution for several hours, then boiled and washed apart from all other clothing.

3. The secretions and discharges from the patient are to be disinfected.

4. Everything that comes in contact with the patient—everything, in fact, that has to leave his room while he is ill—has to be disinfected. This includes all clothing, all dishes, the hands of the nurse in attendance, etc. The nurse must be careful to protect her clothes from infection. She should leave her apron and over-sleeves inside the sick-room, and have them treated like the patient's clothes.

5. Good ventilation is absolutely necessary.

6. All food utensils, medicine glasses, instruments, etc., must be disinfected by boiling, and kept in the room for the patient's separate use.

7. When the patient's illness is over, the room and everything it contains must be disinfected.

Tuberculosis.—The commonest form of this disease is pulmonary consumption, or phthisis, and the sources of infection are chiefly the sputum and, to a lesser extent, the stools. The patient must spit into a sputum-cup in which is kept a little 1 in 20 carbolic solution. A small quantity of the solution will be sufficient to act as a disinfectant, and it can be made weaker if there is any risk of its being used as a poison. The stools should be disinfected before being thrown out.

These cases last longer than the eruptive fevers, and the nurse must be prepared to carry out the treatment rigidly for months. Consumptive patients, unlike those suffering from scarlet fever, etc., are often allowed to move about amongst the others during the day, whence the difficulty is always present, especially among asylum patients, of getting them to

observe the rules. The great source of infection, where there are a number of consumptives, is the dust, which carries the germs of tubercle breathed out and expectorated by the patients. In cleaning their rooms, it is highly important to attend to the rule regarding wiping up the dust with wet cloths, not chasing it about with a broom. Fresh air is especially necessary in phthisis, not only from the sanitary point of view, but also because it has a great influence upon the cure of the disease. Many asylums are now provided with sanatoria where the fresh-air treatment of phthisis is carried out. It happens that, in asylums, it is generally the dements and weak patients who develop this disease. It is difficult to get dements to follow the regulations, and particular attention must be paid to keeping weak and restless patients properly clad and warm in bed in the open air. Suspected cases of phthisis and all persons with a chronic cough should carry a hand-spittoon with them to workshops, chapel, amusements, etc. No suspected case should spit into a handkerchief or rag unless such be forthwith burned. The clothes of a consumptive patient and all linen soiled by him are to be treated with disinfectant at once after removal, and washed separately from the clothes of other persons. Consumptives should be warned not to swallow their phlegm, as by so doing they may set up the disease elsewhere. A consumptive should not kiss or be kissed on the mouth. When a consumptive patient is being forcibly fed, a special tube must be reserved for his own use.

Erysipelas and Abscesses.—Here the infection is carried in the particles of skin from the affected parts. Bandages and dressings, after removal, should be placed at once into a receptacle containing carbolic solution, thoroughly soaked, and then burned.

In all disinfection the nurse must remember that she is in an asylum, and be careful not to allow disinfectants, which are nearly all poisons, to get into the hands of patients.

Disinfecting Rooms. — All openings are to be closed.

The nurse must block up the chimney, and seal the windows, doors, etc., by pasting brown paper over the openings, key-holes, ventilators, etc. The old method of disinfecting with burning sulphur is not considered effective of itself. The whole room—walls, furniture, etc.—should first be sprayed with a solution of formalin. The sulphur (the quantity varying according to the size of the room) should then be placed on a tray or shovel over a bucket of water. The sulphur is lit, the room closed and left for six hours. Instead of sulphur, the vapour of formalin may be used. This is generated in a special formalin lamp, dry tabloids of formalin (the number varying according to the size of the room) giving off the vapour when heated in a metal cup over a spirit-lamp. After this, everything that is washable should be scrubbed with carbolic solution. The walls, floor, bed-stead, etc., should be scraped and washed. If the room is papered, the paper should be renewed after washing down the walls with disinfectant. The clothes are to be disinfected, and removed for washing by themselves. The windows should be thrown wide open, and no patient allowed to use the room till it has been thoroughly ventilated for a week. The bed-clothes, bed-pans, dishes, etc., are to be cleaned with carbolic solution, and everything boiled that can be.

In the daily routine of an asylum nurse's duty, far more important, perhaps, than the antiseptic treatment of disease is **asepsis**, or the prevention of putrefaction and suppuration, which end is to be attained by attention to cleanliness. It is better to kill the germs in the skin and on instruments before an operation, than to treat their effects afterwards by antiseptics. It is better to sterilize a catheter and avoid causing inflammation of the bladder, than to treat this inflammation when it has resulted from using a dirty catheter. The first essential, then, is general cleanliness, the careful cleansing with soap and water and disinfecting solution of all corners of rooms, utensils, instruments, or nurses' hands, which may prove sources of infection.

If suppurating wounds are being dressed, the soiled dressings must be burned, and the nurse must scrub her hands thoroughly and disinfect them before she attends to other duties. When dressing wounds, the hands should first of all be scrubbed with a nail-brush dipped in turpentine, well washed in soap and water, and then rinsed in carbolic or boracic solution.

Surgical instruments must be cleaned deliberately and thoroughly with soap and water. Before being used, they are to be sterilized by boiling. Ward utensils and dishes are cleaned by boiling water and soap; if possible, they should be boiled.

When an **operation** has to be performed, it is the nurse's duty to prepare the operating-room and the patient.

1. *The Room.*—If there is no special operating-theatre, the room to be used must be thoroughly disinfected, and the walls and floor washed with carbolic. The temperature of the room should be about 70°. The nurse must have ready the necessary lotions, lotion basins, pails for used lotions, abundance of boiling water, dressings all cut ready according to the doctor's directions, sterilized towels and jaconet sheets. The operating-table, placed in a good light opposite the window, must be covered with a clean blanket and sheet, and another blanket provided for covering the patient, and one pillow. A most important duty is to provide all the lotions, nail-brushes, etc., for the proper sterilizing of the hands of the operator and those who assist him. The nurse must also provide restoratives in case of collapse, such as brandy and a hypodermic needle with ether.

2. *The Patient.*—He should have a warm bath and some purgative medicine the evening before the operation, and an enema in the morning. The nurse must especially see that the patient's bladder is emptied just before the operation. No solid food is to be given for five hours before, and if the patient is not likely to get a good night's sleep before the operation, the doctor should be informed. The patient must be warmly and loosely clad, and provided with a pair of long white stockings.

The portion of the skin to be operated upon must be rendered perfectly free from germs—*i.e.*, aseptic. All hairy parts are to be shaved. The skin of the part, and for a good distance around it, must be thoroughly scrubbed with green soap and water, sponged with turpentine, and afterwards with ether. The night before the operation a towel soaked in 1 in 80 carbolic solution, and covered with macintosh, is applied to the part, left on all night, and another towel soaked in 1 in 20 carbolic solution substituted one hour before the operation.

In giving hypodermic injections, the same disinfection of the skin should be carried out, especially in those cases where large injections of saline solution are given, or where injections of anti-sera are used.

Wounds are of two kinds :

1. *Healthy, clean, or aseptic wounds.*
2. *Dirty, suppurating, or septic wounds.*

In dealing with aseptic wounds, the less interference the better. The great principle to be observed is to prevent the entrance of bacteria. Dressings, consisting of gauze, cotton-wool, and bandages, are applied to keep the wound from being contaminated by germs from the air, etc.—that is, to prevent it becoming septic—and to protect it from injury while it is healing. These *dressings* are sterilized or antiseptic, and they must be handled with clean, purified hands. They must be kept in clean, closed boxes, and must never be put down on tables, beds, or anything that might make them septic. The nurse must carefully sterilize her hands before she begins to dress such a wound, have everything ready, and carry out the dressing as quickly as possible.

The usual dressing for septic wounds is the antiseptic poultice. After removing the dressing and burning it, the wound is washed with some antiseptic solution. In applying the fresh poultice, a piece of gauze or lint large enough to cover the wound is dipped in some antiseptic solution—carbolic or boracic, according to medical directions. This is covered by a piece of gutta-percha tissue, which overlaps the gauze all round by about $\frac{1}{2}$ inch. In this way evaporation of the lotion is prevented, and the dressing keeps moist for a long time. Cotton-wool and a bandage are then applied. After dressing a septic wound, the nurse must carefully disinfect her hands before she does anything else.

BANDAGING.

The principal requirement in a bandage—and with asylum patients it is all-important—is that it shall stay on. The neatness and regularity of the diagram bandage have often to be sacrificed to this requirement.

In applying a bandage the nurse should—

1. Fix the bandage with the first turn.
2. Bandage from within outward over the front of a limb, and from below upwards.
3. Put on a bandage sufficiently large to fulfil the purpose completely. In restless patients it may be necessary to apply several layers.
4. Fix all bandages with thread, not with pins.
5. Keep a good bandage if it can be sterilized and used over again.

The nurse must be on the outlook for signs of too tight bandaging. The parts below the bandage may be swollen and congested, or they may become cold and bloodless. Any complaint or appearance of a bandage being too tight should be at once reported and the bandage should be loosened.

Plaster is sometimes used to secure dressings. Great cleanliness must be attended to in its use. It is also applied to the skin in treating certain fractures, such as the ribs. The best way of heating it is to apply it to the outside of a zinc pail containing boiling water.

In nursing cases of fracture the splint requires to be re-padded from time to time. The hard pieces of wool have to be removed, and fresh, soft wool applied. The padding must be thick and equally distributed. A supply of fresh bandages must be at hand for the doctor when he replaces the splint.

ADMINISTRATION OF MEDICINES.

The greatest care must be exercised in the storing and giving of medicines, as the slightest error may have very serious results.

Nothing but medicine is to be kept in the medicine press. There should be a separate press for *poisons and poisonous lotions*. If there is only one press in the ward, the medicines for internal use must be kept in a separate compartment of it. There should be only one key for the medicine press, and it should always be in the possession of the charge-nurse or her deputy. External applications, such as iodine, blistering fluid, etc., should not be kept in stock in the ward press when there is no patient being treated with them.

No medicine, however harmless, is to be given into a patient's possession. If a number of patients in the ward are getting medicine, it is best to place the bottles on a tray. One nurse should watch the tray while another dispenses the medicine. On the tray a small basin of warm water and a medicine towel should be placed, so that the medicine glass may be washed after each dose.

In giving medicine the nurse must devote her whole attention to the work.

When a medicine is ordered for a patient, the doctor may write the prescription on the chart, or simply put a note, such as, 'The mixture three times a day.' The label on the bottle must correspond with the note on the chart.

In pouring out the medicine, the label side of the bottle should be kept uppermost. The label should contain the patient's name, the number of the ward, and full directions as to the giving of the medicine. The nurse should read the label carefully before taking the cork out, and again before putting back the bottle; always shake the bottle; never get into the habit of recognizing any patient's medicine by the colour of the contents, etc.; and cork the bottle tightly before replacing it.

1 minim	is equal to	1 drop.
60 minims	,,	1 drachm.
1 drachm	,,	1 teaspoonful.
2 drachms	,,	1 dessertspoonful.

4 drachms is equal to 1 tablespoonful.
8 drachms, or 2 tablespoonfuls } is equal to 1 ounce.
20 ounces is equal to 1 pint.
2 pints ,, 1 quart.
4 quarts ,, 1 gallon.

The domestic measures (1 teaspoonful, etc.) are never to be relied upon, and a graduated glass measure or spoon should be used. Drops vary in size according to the nature of the liquid and the bottle from which they are dropped, and, unless the doctor orders otherwise, they should be measured in a minim-glass. The dose must be accurately measured by watching the graduated scale on the glass; the nurse must never trust to the eye to gauge the quantity. The medicine-glass must be kept level, and in using small measure-glasses they should be held on a level with the eyes to make sure of this. Remember that a large dose of certain medicines may be injurious.

The medicine must be given exactly at the time specified by the doctor. If medicine is poured out and not used, it must be thrown away. One patient's medicine must never be given to another unless ordered by the doctor in some special emergency. Patent medicines, headache powders, etc., which the nurse may have in her own possession, must never be given to any patient under her care. Any mistake in giving medicine, however trifling it may appear, should be reported to the doctor.

After giving medicine, the nurse should lock up the cupboard securely and keep the key in her own possession. When a medicine is no longer to be used, or when a patient's medicine is changed, the old bottles are to be at once returned to the dispensary. Nor should the nurse give a dose from a bottle that has lost its label, no matter how certain she may be of its contents.

Glasses that have been used for nauseous or oily medicines should be washed in warm water and soda or boiled before

being used again. After giving medicines, the trays, glasses, etc., must be made thoroughly clean and put in their proper place.

If a patient has any difficulty in swallowing medicine, a draught of water given first often gets over the difficulty. A little water should be given after the medicine. If there is any further difficulty, the method of giving the medicine will be decided by the doctor.

If a patient refuses to take medicine, the fact should be reported; no compulsion may be used. If the medicine has a bad taste, the patient should be informed of the fact. It is unwise to cheat him regarding this, or he may refuse medicine altogether afterwards. Unless in the case of helpless and demented patients who do not understand what is being done, medicine should never be given secretly in a patient's food.

The nurse should see that the patient swallows the medicine. If pills cannot be swallowed, they may be given with a little soft food or broken up and given in water. Some patients try to conceal pills in the mouth. The surest way of giving a powder is to place it on the tongue and let the patient wash it down with water.

The action of the medicine should be noted, and any effects, whether noted by the nurse or complained of by the patient, reported. Bromides produce a skin eruption, quinine produces ringing in the ears and headache in some cases, etc.

Some consideration should be exercised even in giving the ordinary aperients. A dose of castor-oil hurriedly given just before breakfast may result in the patient's losing his breakfast, his medicine, and his temper at one swoop.

EXTERNAL APPLICATIONS AND APPLIANCES.

Cold applications may be in the form of ice-bags or cold cloths. The ice-bag is the common method of applying cold to the head. The bag, usually made of rubber, is filled with crushed ice; it must be refilled before the last piece of ice is

melted. All appliances for ice keep longer cold, and the ice lasts much longer, if the water can be drawn off as it melts; and in applying ice to the chest, as is now done in pneumonia, some means is provided for draining off the water. It is sometimes difficult to keep an ice-cap in position on the head, and as its constant slipping about will certainly cause a patient much annoyance, it is essential that the nurse should from the first devise some means for keeping it in place.

Cold cloths and ice-bags must be removed before they begin to get warm.

Wet compresses are useful to allay local inflammation. A compress round the throat is beneficial in ordinary sore throat or tonsillitis. A piece of calico or, better, flannel is dipped in cold water, loosely wrung out, and applied to the part; over this is placed a piece of waterproof tissue sufficiently large completely to cover the flannel. A layer of cotton-wool and a bandage complete the dressing. Wet compresses are not to be renewed until they become dry.

Hot Applications.—The easiest way to apply heat to the body is by means of hot-water bottles. In paralysis and other diseases the skin is more easily blistered than in healthy persons, and many of the insane are so insensitive that they do not feel excessive heat. The bottles should be wrapped in flannel and put under the sheet on which the patient lies, so that they can be kept in place. Dry heat may also be applied in the form of hot sand-bags; the same precautions are necessary.

Hot moist applications include the ordinary poultice, fomentations, and stupes.

It is most important that the nurse should know how to make an ordinary **poultice.** To make a linseed poultice she should get ready boiling water, linseed-meal, basins, a spatula, linen or tow, gauze, jaconet, cotton-wool, and a binder; use a piece of linen or tow several inches larger all round than the part of the body to be covered; warm the linseed before the fire or in the oven; scald the basin with boiling water;

pour the necessary amount of boiling water into the basin, and stir in as much linseed as will be required for the poultice; stir with a spatula, and add linseed till the mixture is of a fairly firm consistency; turn out the mass upon the linen or tow; it ought to leave the bowl quite clean; dip the spatula in boiling water, and spread the mass over the surface of the linen until it is half or three-quarters of an inch thick, and of the size and shape the poultice ought to be; put over the linseed a piece of thin gauze, and if using linen, fold the dry edges of it over the face of the gauze; apply the gauze side to the part, cover the poultice with jaconet, cotton-wool, and a binder. She should take care that the poultice is not too hot; it should be tested on her own cheek; she must not press it down on the part, but allow it to settle. An ordinary-sized poultice should remain warm for two hours if it is properly covered up, but it must be taken off before it gets cold. A cold poultice is worse than useless, for it may cause a chill about the diseased organ.

The patient should be prepared as much as possible before the poultice is brought to the bedside; the part exposed can be covered up by the bed-clothes.

When another poultice is to be applied, the second one should be brought to the bedside before removing the first one. Before putting on the second, the nurse should gently dry the skin to avoid 'poultice rash,' and when the last poultice is removed, put a layer of cotton-wool over the part.

A poultice all round the chest is called a 'jacket poultice.' It is usually made in two large pieces, one for the back and one for the front, with tapes at the shoulders to join the two parts and keep the whole poultice from slipping down. A jacket poultice should remain on for three to four hours.

A *mustard poultice* may be made in several ways: 1. The ordinary mustard leaf, which should be soaked in warm water, may be applied firmly to the part, and held in position with some wool and a bandage. 2. Mustard may be mixed with tepid water spread on a piece of brown paper, and applied like

the mustard leaf. 3. A linseed poultice may have mustard sprinkled over its surface after it is made. (These three forms of poultice should not be kept on for longer than twenty minutes to half an hour.) 4. The mustard may be mixed up with the linseed in making a poultice. One tablespoonful of mustard may be used in a poultice large enough to cover the chest. This form may be left on for three to four hours, and is perhaps the best of all.

Starch poultices are used in some skin diseases to remove crusts before applying the ointment. The starch should be made into a stiff paste with cold water, and then mixed with boiling water until it turns a clear colour. It is then allowed to cool, when it forms a jelly, which is applied on a piece of linen covered with macintosh.

Bread poultices and *bran poultices* are not often used unless they have added to them charcoal, boracic acid, or iodoform, to render them antiseptic. To make a bread poultice, the nurse should soak some stale bread in boiling water, drain off the water, and spread on a piece of lint. Powdered charcoal may be added, either mixed with the bread or linseed or simply sprinkled over the surface.

A useful application to gumboils is the fig poultice. The nurse must toast the fig, pare the skin from one side, and apply it with that side next the gumboil as hot as can be borne.

Fomentations are made by wringing flannels out of boiling water. They should be prepared at the bedside. They are applied to the skin at the part directed, and covered with waterproof. They should not be allowed to get cold, but be renewed every twenty minutes at least during the time their application is directed.

In preparing an antiseptic fomentation, a piece of lint or flannel is wrung out of antiseptic solution of the requisite strength, and applied as hot as can be borne. This is then completely covered with jaconet, over which is put cotton-wool secured with a bandage.

Stupes are fomentations with some external remedy, such as spirits of turpentine (20 to 30 minims, which should be measured), tincture of opium, or belladonna, sprinkled over the surface.

Enemata are sometimes employed to administer medicine by the bowel. The same precautions are to be taken as in giving the nutrient and purgative enemata already described.

The commonest medicinal enema is starch and opium, given in diarrhœa. Thin boiled starch is prepared and allowed to cool. A teaspoonful of starch is enough for one enema. If it is too thick when cold, it must be thinned by stirring in cool water, or it will not pass through the tube. Two ounces of the mixture is used, and to it is added the amount of laudanum prescribed by the doctor.

Medicines, like nutrients, may be given by the bowel in the form of suppositories.

A patient must always sit up in bed before being allowed to **gargle**. If the patient has any difficulty in learning to gargle, the nurse must practise herself and explain how it is done.

The object of **inhalations** is to bring simple steam or medicated vapour in direct contact with the lining of the air-passages. A simple and efficient apparatus is made by pouring boiling water into a jug, the neck of which is surrounded by a folded towel. The patient places his mouth and nose into the aperture and breathes the vapour.

In applying a **blister**, the nurse must shave the hair on the part; then wash the part and dry it carefully. The blister should be held in position by adhesive plaster or a bandage. When the blister is properly raised the plaster is removed. The fluid is allowed to run out by snipping the raised skin at the dependent part with sharp-pointed scissors. The part should then be gently wiped, and dressed with a piece of lint covered with the ointment prescribed.

Hypodermic needles are used for giving medicines, and in some cases nourishment. The nurse must keep the instrument

perfectly clean, and know where to find it when it is wanted. It should be boiled before use.

Many cases of puerperal fever come into asylums, and in these and other conditions the nurse will have to administer the **vaginal douche.** The douche may consist simply of sterile water, at a temperature of 95° to 110°, or it may be a solution of some antiseptic which will be ordered by the doctor. It may be given by means of a douche-can and tube, or by a syringe, but in any case the instruments used must be perfectly clean and washed in an antiseptic before being used. The private parts of the patient must be cleansed before and after the operation.

The patient should lie on her back, with the knees flexed. The nozzle of the tube is introduced about 2 or 3 inches backwards and downwards. If the douche has to be kept up for some time and given very slowly, the nurse must be careful to keep up the temperature of the fluid. The bed must be protected by sufficient waterproof sheeting, and the patient must be carefully dried and comfortably covered up in a warm and perfectly dry bed after the operation. There are several methods of placing the patient for the operation, but the nurse should be thoroughly certain of what she is doing.

When corrosive sublimate is used in a vaginal douche, as it often is, the douche should be followed by one of simple boiled water at the proper temperature, as corrosive solution retained may produce symptoms of poisoning.

In managing a case of labour, the main point to be attended to is a strict observance of the general principles of absolute cleanliness and the prevention of sepsis.

TREATMENT BY BATHS.

The various forms of baths and the conditions in which they are employed may be better understood if a glance is given at the effects which the application of water at various temperatures has upon the skin. The skin contains an enormous number of bloodvessels, and the quantity of blood in the skin may be increased or diminished according as these bloodvessels dilate or become narrower. The skin also contains a great number of sweat-glands, which can be

made to pour out more sweat according to the degree of heat applied to the skin.

If we apply warm water to the surface of the skin—that is to say, water at a temperature above 98·4°—we see the skin become red. This is due to an increase in the blood-supply to the skin. At the same time the water stimulates the sweat-glands, and it also renders the skin more sensitive by its action upon the nerve-endings. If we can bring about an excessive flow of blood to the skin, it is certain that we have deprived other organs in the body of a part of their blood for the time being. By the application of hot water to the skin over the abdomen we can aid in relieving congestion of internal organs.

The application of cold water has the opposite effect, but after a time we get what is called the *reaction*. If we immerse a patient in a cold bath at a temperature of 45°, the blood-vessels in the skin contract to withstand the great loss of heat; the skin therefore becomes pale. At the same time the heart beats more slowly, and the breathing is short and panting. After a time, if the bath is not too long continued, the reaction sets in. The blood-vessels in the skin dilate, the skin becomes red, the patient feels warm, the breathing is freer, and the heart beats more rapidly.

In the use of water as a means of treating a disease, the results aimed at depend upon one or other of these changes that take place in the blood-vessels and sweat-glands. The reaction which is brought about by daily cold bathing not only affects the circulation, but improves the appetite, the body-weight, and the mental condition of the patient.

TEMPERATURES OF VARIOUS BATHS.

Cold bath	...	...	45° F.
Cool bath	...	...	65° F.
Temperate bath	...	...	78° F.
Tepid bath	...	...	85° F.
Warm bath	...	...	95° F.
Hot bath ...	...	...	105° F.

A cold plunge bath or a cold douche may be prescribed in cases of nervous disease. In order to get the full benefit of the reaction, it is necessary to see that the patient is not chilled down during undressing. The bathing should take place in a well-heated room. The colder the water, the quicker and more powerful will be the reaction. The bath must never be continued longer than a few minutes. After the bath the patient should be vigorously rubbed down with towels, and should take some mild exercise. Under medical supervision the cold douche is a valuable adjunct in the treatment of nervous disease. Unfortunately, its use in former times as a mode of punishing patients has brought it into disfavour, like many other forms of treatment which, given under medical supervision and freed from the traditions surrounding them, may be of great service.

The cold bath is often given to reduce the high temperatures of certain fevers, such as typhoid. In such cases the bath used is a portable one, and is brought to the patient's bedside. The patient is lifted into the bath on a sheet; two nurses lift the ends, and carefully lower the patient into the bath. At the end of the time prescribed he is lifted out again on the sheet, put back to bed, and carefully and quickly dried. He is then placed between well-warmed blankets, and hot-water bottles are applied to his feet. The object of lowering and raising the patient on a sheet is to avoid any movement on his part, and so save his strength, a matter of great importance in those serious cases in which the bath is resorted to. It is usual for a doctor to be present on such occasions; but if the nurse is left in charge she must carefully watch the patient, feel the pulse frequently, and at the slightest sign of anything wrong have the patient at once removed. The patient's temperature is to be taken just before, and it must be taken assiduously during, the application of the bath. The patient must be removed some time before the temperature comes down to the normal. After removal to bed the temperature must be taken at intervals.

When tepid water is sponged over the skin of a feverish patient, the evaporation of the water aids in lowering the temperature, and this is made use of in feverish conditions of all kinds. The patient is sponged under a blanket in the way previously described.

High temperatures may be lowered by the *cold pack*. In giving this, the bed is first protected by a waterproof sheet, over which is laid a blanket. The patient is stripped of all his clothing, laid on the blanket, and wrapped in a sheet wrung out in cold water. The sheet must touch every part of his body, and be tucked in round his throat. The patient is then wrapped in the blanket, and covered over with blankets, tucked in all round him and up to his chin. The temperature is lowered by the copious perspiration which the pack produces.

A patient in a pack must be carefully watched all the time. The duration will be prescribed by the doctor, and is usually twenty to thirty minutes. At the end of that time the sheet is to be removed, and the patient's body rapidly sponged with tepid water and thoroughly dried. He is then to be placed in a well-warmed bed and carefully covered up.

A *hot pack* is given in the same way, the sheet being wrung out in water at a temperature of 100° to 110°F. It is used for its sedative action on the nervous system in cases of excitement, and also for sleeplessness. A patient in a pack is considered to be undergoing restraint, and the duration of the pack has to be recorded in the register of restraint.

The continuous hot bath is largely used as a means of calming excitement. The patient is kept in a bath at a temperature of 95° for hours at a time. Great care has to be exercised in adding hot water to keep up the temperature, and the patient must be kept under constant observation to guard against accident, exhaustion, etc.

The application of cold or hot water to the body may be confined to one part, and so we have the sitz bath, the hand or foot bath, and wet packs to different parts of the body in the form of the wet compress.

The sitz bath is given in a special tub. A warm sitz bath of 90° to 100° for ten minutes is one of the first remedies to be employed in cases of retention of urine.

A hot foot bath is often given in the early stages of a cold. The water should be deep enough to reach to the knees, and a blanket should be put round to enclose the tub and the patient's knees. The temperature should be 100° to 110°.

The cold douche to the head is rarely ordered in the treatment of disease. Its reaction produces congestion of the head and headache. It is sometimes given in mental cases, the patient sitting in a hot bath while cold water is poured from a height over the crown of the head.

Medicated baths are those to which some remedy has been added. These include salt, mustard, sulphur, etc. The quantities to be added to the bath and the directions will be given by the doctor. Many of these baths are used in the treatment of skin disease.

Massage, strictly meaning 'kneading,' is a word used to describe a number of manipulations which are carried out on the patient's body, muscles, joints, etc., by the hands of the nurse. It is believed to promote the circulation in the parts treated. It is used to improve the nutrition in a wasted limb and restore the power in groups of muscles. It is said to soothe the pain of neuralgias and to reduce thickenings and swellings resulting from inflammation. Massage of the abdomen is used in the treatment of constipation.

The simplest form of massage is the brisk rubbing of the body with the hands or towel after the morning bath. The more complicated operations are :

1. Stroking, or *effleurage*. This consists in gentle stroking movements over the skin, made either with the flat of the hand or the edge of the extended forefinger and thumb. It is intended to promote the circulation and reduce congestion in the veins and lymphatics, and so the movements are made only in the direction of the heart—that is, upwards in the limbs, and towards the middle line in the body.

2. Rubbing proper, or *massage à friction*. The thumb, the

finger-tips, or the whole hand may be used to make forcible rubbing and pressing movements over special spots on the body surfaee. It is specially applieable to the reducing of effusions at the joints or inflammatory thickenings in the museles.

3. Kneading, or *petrissage*. The muscles of the limbs or parts of the body to be treated are gripped between the hands, firmly kneaded against the bones, and rolled about under the hands.

4. Tapping, or *tapotement*. This may be done with the ulnar edge of the hand, so making haeking movements, or with the finger-tips pressed together, making stabbing or pereussion movements.

No fatty material should be used, exeept, perhaps, oceasionally in cases where the aetual rubbing movements cause pain.

For all kinds of massage, half an hour onee a day to begin with is quite enough. The time and frequeney may be extended as the patient gets aecustomed to it. To apply it sueeessfully, the nurse should have a fair knowledge of anatomy ; she should be strong, but eapable of exercising the finest and gentlest pressure, and she must learn to eoneentrate her attention on the work, never considering it monotonous or meehanieal.

These 'passive' movements, as they are ealled, in eontrast to the aetive movements which a person himself makes in taking exercise, eonstitute an important part of the Weir Mitehell or rest eure largely used in nervous diseases, especially of a funetional type. It eonsists in isolation, foreed—*i.e.*, superabundant—feeding, absolute rest in bed, and regular massage.

DYING PATIENTS.

A dying patient should be removed to a single room and a nurse put in eonstant attendance upon him. If he cannot be removed, the bed must be sereened off from the others in the ward.

The nurse should be able to recognize the signs of approaching death as soon as they appear, so that the doctor may be summoned. These signs, which include gradual failure of the pulse, changes in the breathing, accumulation of mucus in the windpipe (giving rise to the rattle in the throat), coldness and clamminess of the skin, etc., are sometimes absent in cases of long-continued illness.

There are many things a nurse may do to ease the last moments. The lips and mouth become dry, and should be moistened frequently. The sweat that breaks out on the face and hands should be wiped away. In very helpless and senile patients, the face may have to be covered with gauze to keep off the flies that seem to be specially attracted to these cases of decay.

The friends of the patient must not be allowed unnecessarily to disturb him by their conversation or conduct. The nurse must be careful in what she says in presence of a dying patient; the consciousness is often quite clear when it does not appear so. The friends may be left alone with the patient if thought wise, and if there is nothing further to be done.

When a patient dies, the eyelids are closed by gentle pressure with the finger. In laying out the body, the limbs are to be straightened, the arms placed by the sides, and the head elevated, whilst the nurse should keep the lower extremities in position by a bandage round the ankles and one connecting the great toes; support the lower jaw by a bandage over the head; thoroughly wash the body, arrange the hair, pack the orifices with cotton-wool, and put on a clean bedgown; wrap the body completely in a clean sheet; remove it to the mortuary in the evening, when the patients have gone to bed; always bear in mind the religion of the deceased, and attend to any special duties it may involve.

The bed-clothes should be disinfected and the bedstead washed with carbolic lotion in every case. Remove the patient's name from the lists of dietary, etc., and send any medicines to the dispensary.

BOOK II

SECTION I

THE NERVOUS SYSTEM

INTRODUCTION.

THE nervous system directs and controls the activities of the various parts of the body. By means of the sensory or ingoing nerves it receives constant information regarding what is occurring throughout the body, and even around it. By means of the motor or outgoing nerves it is constantly transmitting orders which control, increase, or decrease the functional activity of each part of the body. The whole human organism is thus a highly complex machine, which is governed and guided into harmonious working by the nervous system.

The nervous system, therefore, may be compared to a telephone service of wonderful intricacy. In the case of a large institution, the central exchange of such a service possesses perhaps twenty or thirty separate connections to different parts of the building, and in each of these separate parts there is one receiver and transmitter. In the nervous system, however, there is one great central controlling exchange—*the brain*—which possesses for communication between its separate parts and all the regions of the body, not twenty or thirty, but thousands of millions of separate receiving and transmitting mechanisms, or *nerve cells*. The brain may thus be likened to a central telephone exchange of almost inconceivable complexity; and the number of entering and issuing *nerve fibres*

which are required for the conveyance of messages to and from the various parts of the body is beyond count.

The whole of these nerve fibres, except those passing from the nose and the eyes, are collected into a thick root or bundle at the bottom or base of the brain. This root is called the *pons and medulla*, and it is continued down the middle of the backbone, as the *spinal cord*, in the form of a column which is of about the thickness of the little finger.

Whilst this bundle is composed chiefly of nerve fibres, it also contains within it hundreds of thousands of nerve cells, which act as receiving and transmitting stations between the brain and the several regions of the body. The pons, medulla, and spinal cord thus contain multitudes of subordinate exchanges for rendering easier the carrying on of the general control of body function; and, as will be seen later, certain subordinate duties are performed by them under the, when necessary, general direction of the brain, or great central station. For example, as a sub-officer can give directions to a nurse without consulting the superintendent, or even an officer, so the spinal cord can move a limb which is lying in an uncomfortable position without the brain being necessarily aware either of the discomfort or of the movement and the resulting ease.

At various regions along the course of the pons, medulla, and spinal cord bundles of nerve fibres called *nerves* enter and issue. The entering bundles are termed *sensory* nerves, and convey messages *from* the body. The issuing bundles are called *motor* nerves, and convey messages *to* the body.

The majority of the sensory nerve fibrils pass from the skin and from the organs of special sense—namely, those connected with sight, hearing, taste, and smell.

The majority of the motor nerve fibrils pass to the voluntary muscles, each separate muscle fibre of the enormous number which exist in even the smallest muscle receiving its own nerve fibril and contracting or relaxing under its influence.

A smaller, but still enormous, number of the sensory and motor nerve fibrils pass to and from the bloodvessels and the

various internal viscera. These are called the *sympathetic nerves*, and are more under local control than are the general sensory and motor nerves which have already been mentioned. They possess a number of cell-stations, or *ganglia*, which lie in the abdomen and thorax on the front of the backbone, and also a large number of smaller cell-stations which lie in various regions of the body. The sympathetic nerves are concerned with the carrying out of functions which control the general life and well-being of the body, and which therefore do not admit of either delay or great variation, and are therefore less under central control than are the general sensory and motor nerves. For example, in an asylum, the dressing, washing, feeding, etc., of the patients is necessarily carried out by the attendants, and is only brought under general administrative notice when anything grossly wrong occurs. In the same way, in the body, when food enters the stomach gastric juice is poured out, the gastric bloodvessels become dilated and engorged with blood, and digestion and absorption proceed. This result ensues through the agency of the cell-stations of the sympathetic nervous system, and the brain knows nothing about it unless matters do not proceed properly, in which case discomfort from indigestion is felt.

The whole of the extraordinarily complex mechanism which has been briefly described is under the general and *conscious* control of the brain. The brain is, however, more than a mere controlling centre for this intricate system of nerve fibrils and subordinate cell-stations. By means of its thousands of millions of nerve cells and their complex connections with one another, it serves as the physical basis of *feeling*, *thought*, and *action*. Further, the most important and most complex portion of the brain has the power of *deciding* what, if any, sensory impressions shall receive attention, what conscious memories shall be employed, what latent memories shall be revived for the purposes of rational and consecutive thought, and, finally, what actions and what words shall or shall not be employed as the expression of such thought. The brain is thus the organ, and the body is the servant, of mind.

THE BRAIN.

The Brain lies in the cavity of the skull, and weighs about 50 ounces in the male sex, and about 45 ounces in the female. The weight of the brain is somewhat greater in males than in females of equal stature. The brains of tall people are, on the average, slightly heavier in actual weight than are those of people of short stature; but, relatively to height, short people possess the heavier brains.

The brain is protected by two membranes—the *meninges*. Of these, the outer, called the *dura mater*, is strong and fibrous, lines the cavity of the skull, and is smooth and shiny on its inner surface. The inner, called the *pia-arachnoid*, is thin and delicate in texture, supports the bloodvessels which nourish the brain, surrounds and protects the delicate exterior of the brain, and is smooth and shiny on its outer surface. These two membranes lie in contact with one another, and are kept moist by means of the *cerebro-spinal fluid*. They thus resemble in appearance and functions the pleura which lines the chest, and the peritoneum which lines the abdominal cavity. When they are inflamed or diseased, the condition is called *meningitis*, and delirium and other symptoms of injury to the underlying brain result.

The brain is a large pulpy mass of the consistence of blanc-mange. When the pia-arachnoid is removed, the surface of the brain is reddish-grey in colour, and presents a bewildering appearance of furrows and folds. These folds or ridges are the *convolutions* of the brain, and all of them have precise positions and relations to one another and possess special names.

The brain is composed of three large parts: (1) The largest, called the great brain, or *cerebrum;* (2) a smaller, called the lesser brain, or *cerebellum;* and (3) an intermediate or junction brain, or stem, or root, which consists of the *pons* and *medulla*.

1. The **cerebrum**, which will be more fully referred to later, weighs nearly nine-tenths of the total weight of the brain, and constitutes its most important portion. It is divided from before backwards along the middle line into right and left

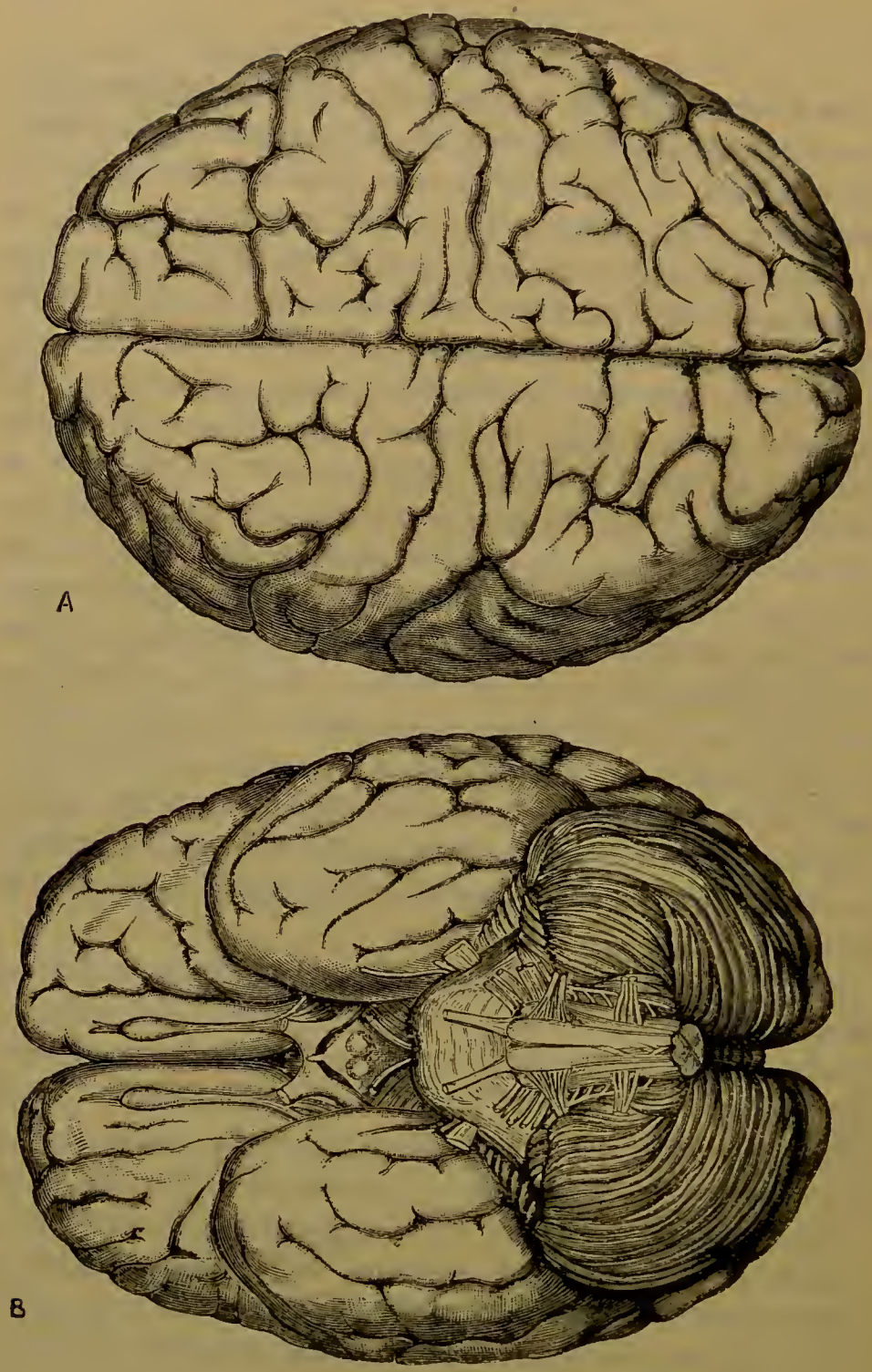


FIG. 1.—HUMAN BRAIN.

A. Upper surface of brain, showing convolutions of cerebrum. *B*. Under surface of cerebrum, cerebellum, medulla, and pons.

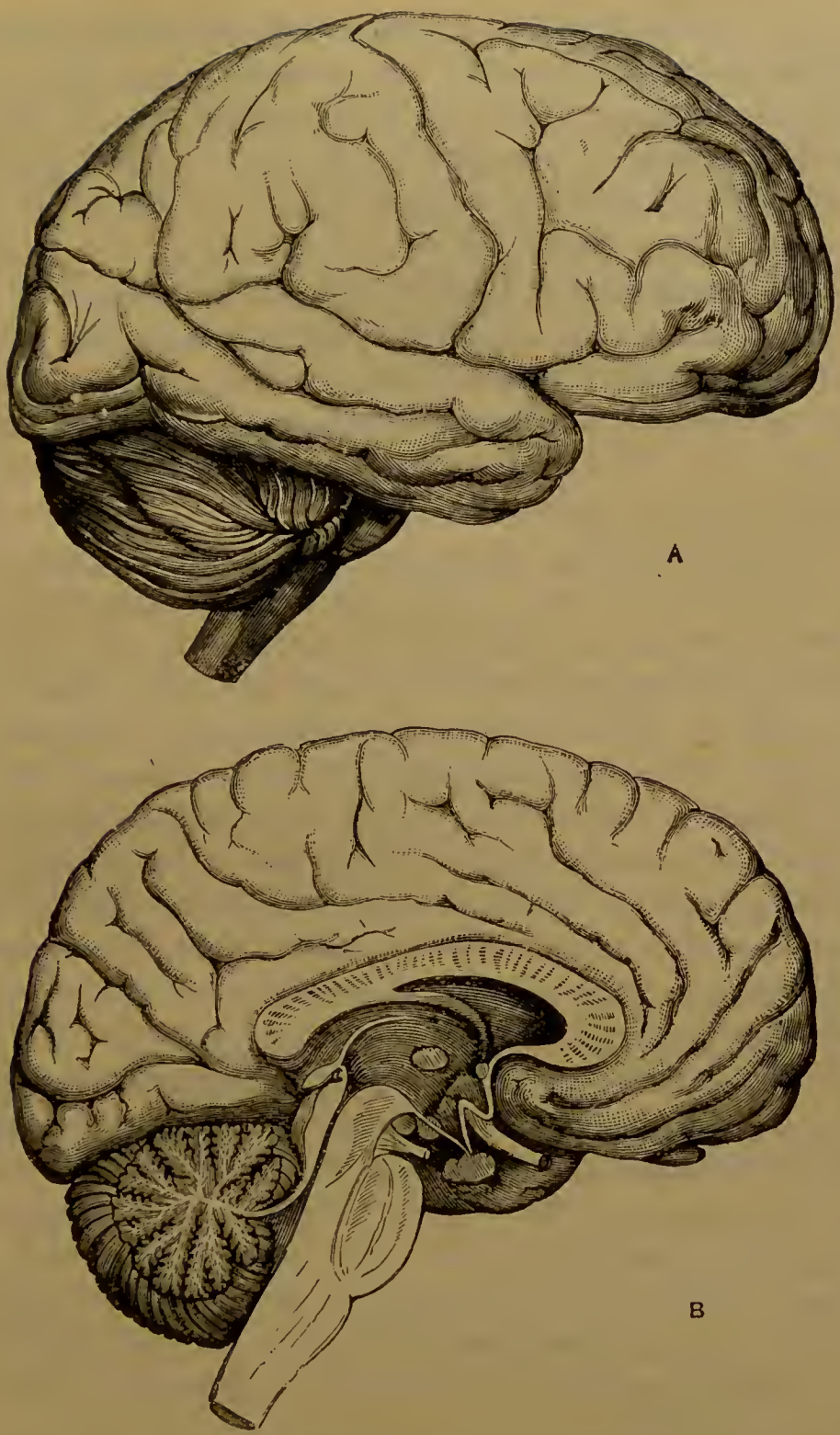


FIG. 2.—HUMAN BRAIN (*continued*).

A. Side-view of brain (right side), showing cerebrum, cerebellum, and medulla. *B*. Section of brain through the centre.

halves. The right half is related to the left half of the body, and the left half to the right. The cerebrum is proportionately much larger in man than in the lower animals, and its relative size and complexity roughly correspond to the degree of intelligence exhibited by its possessor. In other words, the cerebrum is the organ of mind.

2. The **cerebellum** lies underneath the hinder part of the cerebrum, and is relatively much smaller in man than it is in the lower animals. It consists of two halves, a right and a left, which are respectively connected with the right and left halves of the body. The right half of the cerebellum corresponds to the left half of the cerebrum, and the left half to the right.

The **function of the cerebellum** is to control the balancing movements of the body. It enables a man to have his whole muscular system so poised and counterpoised that a perfect balance is maintained when he stands or walks. Men have been said to sleep whilst riding on horseback. The body is held fixed and steady during the performance of such delicate movements as writing, sewing, drawing, painting, playing a musical instrument, etc., by the agency of the cerebellum. Speaking generally, whilst the cerebrum directs and controls the performance of the different skilled voluntary movements, the cerebellum holds the rest of the body taut and steady in order that these may be effectively carried out.

3. The intermediate brain, or **pons** and **medulla**, lies below the cerebrum and in front of the cerebellum. It consists chiefly of innumerable nerve fibrils, which pass between, to and from the greater and the lesser brains, and extend downwards into, and upwards from, the spinal cord. One portion, the sensory nerve fibrils, pass upwards to the brain from the various regions of the body; the other portion, the motor nerve fibrils, pass downwards from the brain to the different parts of the body.

In the centre of the pons and medulla lie large numbers of nerve cells, which serve as controlling agents for the cranial nerves. Certain of these groups of nerve cells exercise what

are called **vital functions**—that is, functions absolutely necessary to life. They control the movements of respiration, the beating of the heart, and the degree of contraction of the muscular walls of the bloodvessels, as well as other bodily functions. Such functions could not safely be placed under the control of the will, or one could die to order. Even respiration is not really under the control of the will, as anyone can prove by trying to stop breathing. The pons and medulla are thus the important centres for the control of vital functions, and injury to, or disease of, these parts may cause life to cease suddenly.

THE NERVOUS ELEMENT, OR NEURONE.

Like all other tissues of the body, the nervous system is composed of innumerable cellular units, or minute bodies which are separate from each other. For example, the liver is composed of small elements called 'liver cells,' and the muscles are formed of small elements called 'muscle fibres'; and in each of such organs these minute special elements are supported and bound together by small quantities of an almost universal tissue called 'fibrous tissue.' Similarly, the nervous system is composed of minute elements, in this case termed **neurones**, which differ from the cells of other tissues in being of extremely complex structure. The neurones are supported and bound together into nervous tissue by a peculiar delicate binding tissue, also composed of cells, to which is applied the term **neuroglia**.

The nervous element, or neurone, consists of a body called the *nerve cell*, from which arise, like the roots and branches of a tree, numbers of long and delicate *processes*.

The whole neurone may be looked upon as a piece of electrical apparatus, of which the nerve cell is the battery and the processes are the wires for the conduction of the messages. As has already been remarked, the cerebrum alone contains thousands of millions of these intricate pieces of apparatus.

The **nerve cell** is not merely a minute particle of living matter, for it possesses a complex structure. As may be seen in the diagram (Fig. 3), it contains in its centre a round body, termed the *nucleus*, which is necessary for the life of the cell, and which contains within it a further small body, the *nucleolus*, or little nucleus. The nerve cell itself consists of a substance called protoplasm, which is not visible in the diagram, but which is the essential living tissue of the cell, and of another substance which is arranged in small wedges and spindles throughout the cell, and is depicted black in

FIG. 3.—MOTOR NERVE CELL FROM THE SPINAL CORD OF THE OX.

The *nucleus* lies in the centre of the cell and contains the *nucleolus*. The processes arise around the cell. The process to the left is the *axone*. The remaining processes are *dendrites*. (After von Lenhossék.)

the diagram. This latter substance is not part of the essential living tissue of the cell, but is the material which is employed by the cell in the performance of its functions.

The *processes*, or conducting fibrils of the neurone, are of two kinds: (1) **Dendrites**, or branches, which spread around the cell like the roots of a tree; and (2) the **axone**, which is often inches, or even feet, in length.

The dendrites, as may be seen in Fig. 3, contain within them particles of the non-living contents of the cell, whereas the axone is composed solely of living substance or protoplasm. The dendrites convey impulses to, or receive impulses from, neighbouring nerve cells. The axone transmits impulses to or from distant parts. The nerves are composed of the axones of nerve cells, and some of these are of great length. For example, the muscles of the sole of the foot are influenced by the axones of nerve cells which lie in the spinal cord at the level of the loin; and the skin of the sole of the foot is supplied by the terminations of axones which extend to nerve cells

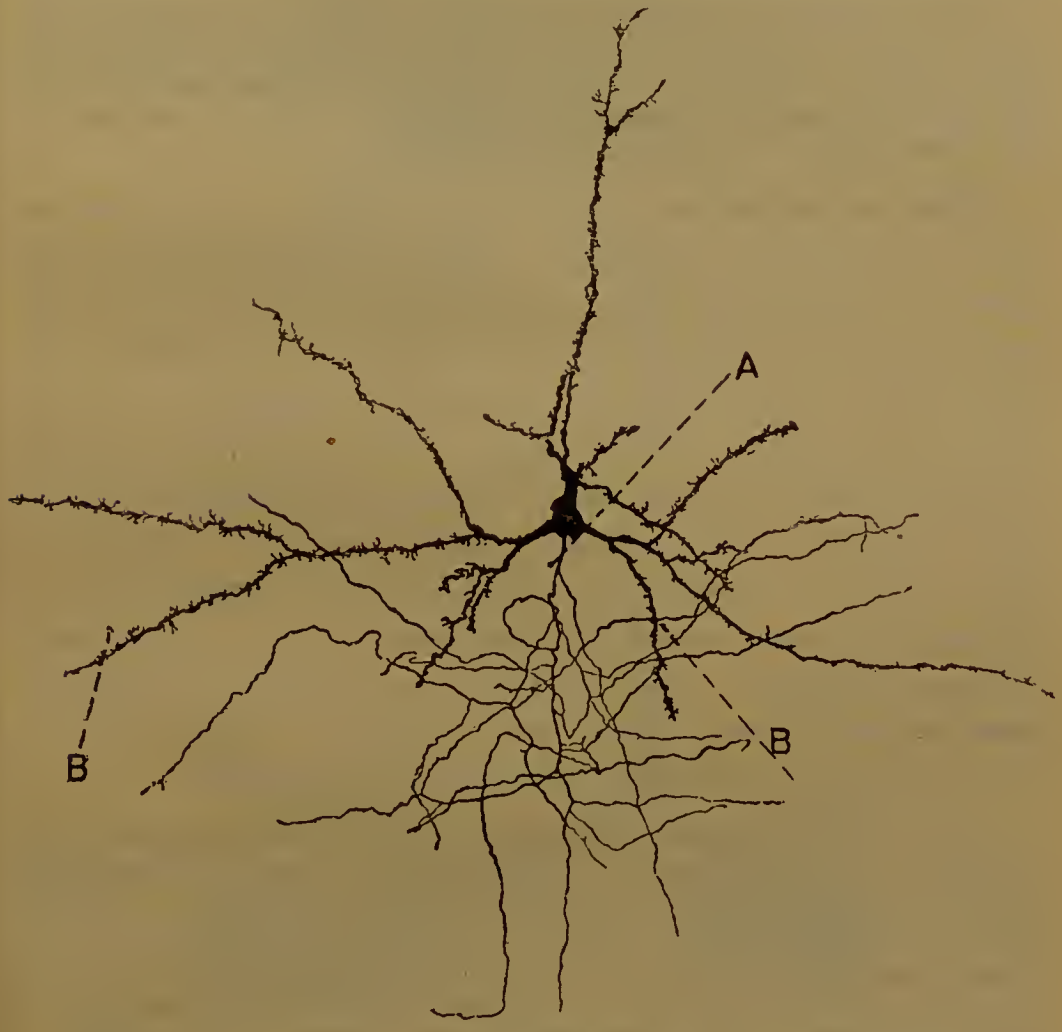


FIG. 4.—THE NEURONE, WHICH CONSISTS OF A NERVE CELL AND ITS PROCESSES.

The dark body in the centre is the nerve cell. A, axone. B B, dendrites. (After Kölliker.)

at the level of the loin, and then continue upwards through the whole length of the spinal cord, and eventually end in the medulla, having thus in tall persons a length of more than 5 feet. As all

except the largest nerve cells are so small as to be quite invisible to the naked eye, the possession of such extraordinarily long nervous processes by these is one of the most wonderful features of the architecture of the body.

In Fig. 4 is illustrated a whole neurone. The dark body in the centre represents the nerve cell. The coarse black processes represent the dendrites, and the delicate branching process represents the axone.

It will be readily understood, from the remarks on the axone which have just been made, that, given a nerve cell of the size figured, its axone might extend for hundreds of yards; and that the axone of the greatly magnified nerve cell illustrated on Fig. 3 would extend for miles before it reached its termination.

Motor Nerve Endings.—Nerve fibres pass from the central parts of the nervous system to all parts of the body. They cause muscles to contract or relax, glands to secrete or to stop secreting, worn-out or dying tissue cells to be replaced after their kind by the growth and subdivision of healthy cells, and all the various parts of the body to obey the imperious dictates of the central nervous system. Few of the elements of which the body tissues are composed would be able even to live if they could not receive messages from the central nervous system, and none would be able properly to carry on their various functions. For example, if a muscle permanently loses its motor nerve fibres, every muscle fibre dies, and the whole structure is replaced by a scar of fibrous tissue.

In Fig. 5 is illustrated, at the upper part, a motor nerve cell with its axone curving downwards, and, at the lower part, the branching endings of the axone on the surfaces of two muscle fibres. Muscle fibres are barely visible, as minute threads, to the naked eye, and an axone magnified to the size of that in the figure would, therefore, be many hundreds of yards in length. This is the reason why a gap is left between the upper and the lower portions of the figure.

The mode of ending of an axone on a muscle fibre is called a **motor end-plate**, and is the most common method by means of which motor nerve fibres communicate their impulses.

Sensory Nerve Origins.—Nerve fibres pass from all parts of the body to the central parts of the nervous system. The majority pass from the *skin* and from the organs of special sense—namely, the *eye*, *ear*, *nose*, and *tongue*.

The nerve fibres from these parts enable us to know what is occurring on the surface of our body and around us. We see near and distant objects with the eyes; we hear sounds, especially those of human speech, with the ears; we smell

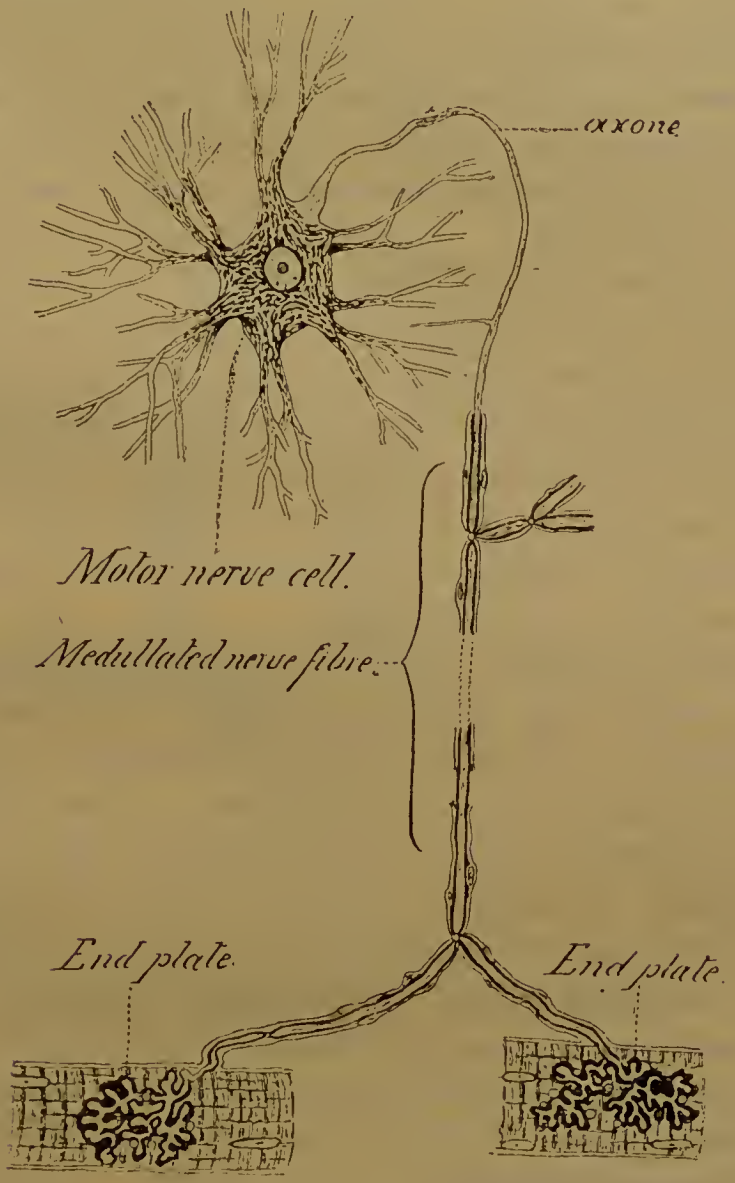


Fig. 5.

with the nose; we taste with the tongue; and we feel objects touching us by means of the skin. The nervous system thus possesses *five special methods* of receiving sensations. These are commonly termed 'the five senses.'

The nervous system also possesses a *sixth special method* of sensation, which is equally important, but of which we have less direct knowledge—namely, the **muscular sense.** By means of this sense the nervous system acquires knowledge of the position and degree of tension of the joints and muscles. For example, with the eyes shut we are able to touch the tip of the nose or any other part of the body quite accurately with the finger-tip. Again, we are able to walk without knocking the legs against one another, and to use our arms without awkwardness. In moving our limbs we do not need to watch where they are going, and when our eyes are shut we do not need the limbs to touch surrounding objects in order to let us know where they are. We have this important knowledge of the position of our limbs, and this power of control over their movements, by means of the muscular sense, whereby multitudes of sensory impressions from the joints and muscles are constantly streaming along the sensory nerves into the central nervous system.

In a state of health these six avenues of sensation are all that we require and all that we employ. The parts of the body underneath the skin possess no sensation, for they are protected from injury by this structure. If an incision be made through the skin, the parts beneath can be touched without pain. If the skull or the abdomen be opened, the brain or the internal viscera can be touched or handled without pain, and even without the knowledge of the patient. In other words, in a state of health we receive no conscious sensory impressions from the internal organs. All these parts are, however, supplied with sensory nerves, which are called **nerves of general sensation.**

These nerves, though they convey no impulses of which we are conscious when the regions from which they pass are in health, at once convey sensory impressions, which produce pain or discomfort, if any disease or disorder is present. For example, if the pleura or peritoneum is inflamed, we at once have severe pain in the chest or abdomen; if the intestinal

walls are irritated by their contents or by other causes, we suffer from gripes or colic; if the muscles of the back are inflamed, we suffer from lumbago; if we develop a deep-seated abscess, the part becomes acutely painful, although nothing may be visible externally.

By means of the nerves of general sensation we thus become aware of any disorder or disease inside our bodies.

The function of the various kinds of sensory nerves is, thus, to convey information to the central nervous system. The

FIG. 6.

Mode of ending of sensory nerve fibres in the skin of the ear of a white mouse three days old. (After van Gehuchten.)

most important avenues of sensation are, however, those which at first sight seem to be of the least value—namely, *touch* and *general sensation*. We could live, and live healthily, although we might soon lose our mental powers, in the absence of sight, hearing, taste, smell, and muscular sense, and many individuals exist who have permanently lost one or more of these. If, however, *our skin were insensitive*, we should constantly be suffering injuries of which we should have no knowledge; and if we possessed *no general sensation*, we should be unaware of

the existence of disease or disorder in our bodies, and should be liable at any time to disorganization of our bodily functions, and to consequent untimely death.

There are two chief modes by which the **sensory nerves** end in the various parts of the body. The majority of these nerves end in *minute fibrils*, which ramify amongst the elements of which the different tissues, in which they end, are composed. In Fig. 6, for example, is shown the multitude of fine fibrils into which a sensory nerve divides when entering the skin. These fine fibrils ramify in

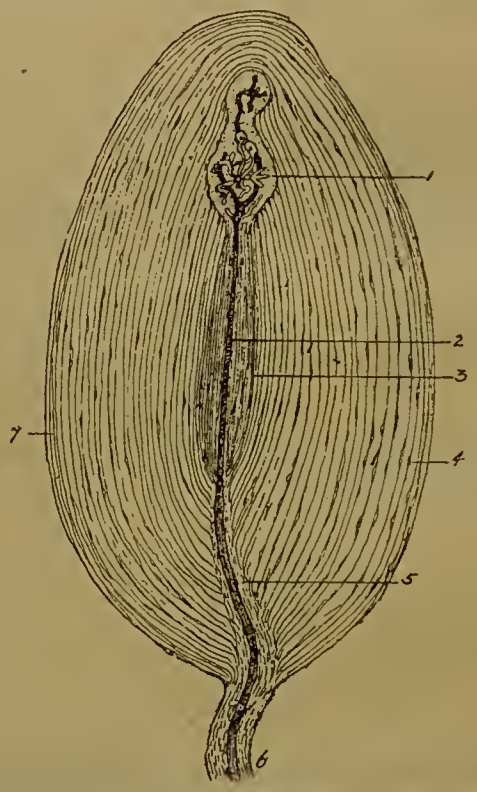


FIG. 7.—PACINIAN CORPUSCLE (SENSORY END-ORGAN) FROM THE MESENTERY OF A CAT.

1. Branching ending of the nerve fibre. 2. The nerve fibre. 3. Inner portion of the fibrous capsule. 4. Outer portion of the fibrous capsule. 5. Fibrous tissue sheath of the nerve fibre. 6. The nerve fibre as it enters the end-organ. 7. Surface of the capsule. (After Ranvier.)

the substance of the true skin, and many of them end in minute twigs, which lie between the cells of the deeper and living layer of the surface, or scarf-skin. The readiness with which such delicate fibrils will receive sensory impressions must be at once intelligible. It is by a special and extremely complex modification of this mode of ending that sensory impressions arise in the case of those most

complicated of all organs of special sense, the eye and the ear. The special senses of taste and smell possess similar but much less complicated modes of nerve-ending.

The second common mode of ending of sensory nerve fibres is by means of special structures called *end-organs*, which are usually about the size of the head of a small pin. Many of these lie in the papillæ of the true skin, and others exist in the fat beneath the skin of the fingers, around the joints, and in the muscles. An example of a sensory end-organ is illustrated in Fig. 7, which shows a nerve fibre ending in the middle of a small oval body composed of fibrous tissue, and bearing some resemblance in structure to an onion. It will be readily understood how such a nerve fibre will be stimulated when pressure is exerted on the capsule in which it lies. This method of receiving sensory impressions is naturally much less delicate than, though in its way equally as useful as, that by means of minute nerve fibrils.

THE NERVES.

The nerves are white cords which pass between the central nervous system and the various parts of the body. The smallest nerves are thinner than fine cotton, and the largest are thicker than a lead pencil. The nerves may be compared to electric cables of great complexity, as even a small nerve trunk contains thousands of nerve fibres. The nerve trunks are largest near the spinal cord and brain, and gradually divide into smaller and smaller branches as they reach the parts of the body in which they end. The largest nerve trunks are the longest, one of the largest of all being the sciatic nerve in the thigh.

Structure of Nerves.—The nerves are composed of numbers of nerve fibres, which are bound together into larger or smaller bundles by means of fibrous tissue. Each nerve fibre contains an axone, or process of a nerve cell, which conducts nervous impulses to or from its nerve cell, according to whether this is sensory or motor in function. Some of these nerve fibres therefore pass *from* the central nervous system, and conduct impulses to the various regions of the body; others pass *to* the central nervous system, and conduct impulses from the various parts of the body.

Structure of Nerve Fibres.—Each single nerve fibre may be looked on as an electric wire which extends between some region of

the body and some part of the central nervous system. As electric wires are coated with protective and non-conducting material, so are the axones of nerve cells. In Fig. 8 are shown two nerve fibres. The axone is the thin strand of nervous tissue which lies in the centre of the nerve fibre. Surrounding the delicate axone is a covering of oily or fatty material, called the medullary sheath, which insulates it and protects it from injury. This sheath, like every structure in the body, is composed of cells, and it is divided into

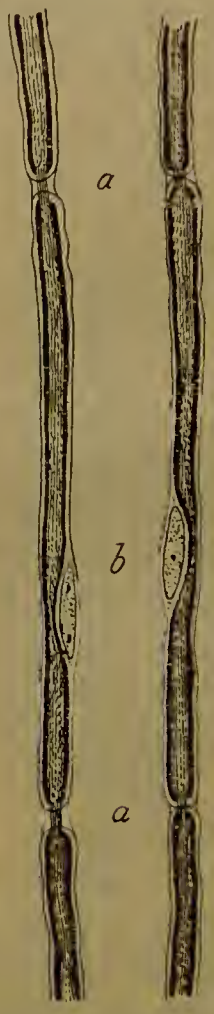


FIG. 8.—MEDULLATED NERVE FIBRES.

a a, Segments into which the medullary sheath of the nerve fibre is divided. *b*, Nuclei of segments of the medullary sheath. A thin fibrous sheath surrounds medullary sheath. The axone lies in the centre of the medullary sheath and passes across the intervals in this. (After Quain.)

segments at regular intervals. These divisions are shown in the figure at (*a*), and the axone can be seen passing across the interval. Outside the medullary sheath is a thin fibrous sheath which extends across the intervals and supports the fibre. In the middle of each segment is a nucleus (*b*), which presides over the life and nutrition of the segment of the sheath in which it lies.

A nerve fibre is thus like a delicately-made, insulated and protected electric wire. It is, however, an improvement on an electric wire in the respect that it is alive and executes its own repairs, and therefore does not require the periodic services of an electrical engineer.

Individual nerve fibres are almost inconceivably thin, in spite of the fact that the longest are some feet in length. If a nerve fibre, for example, were magnified to the size shown in the illustration, its total length might be anything up to a mile. Nerve fibres are, however, coarse in comparison with the innumerable delicate nerve fibrils—many of which are branches of these—which exist both in the central nervous system and in the skin and the organs of special sense.

THE SYMPATHETIC NERVES.

Whilst the majority of the thousands of millions of nerve cells in the body lie in the central nervous system (brain and spinal cord), which is the great central station of nervous function, a not inconsiderable number, amounting to hundreds of thousands at the least, lie in small subordinate cell-stations, called *ganglia*, which exist in many regions of the body.

The greater number of these form a double row of knots, or ganglia, which are formed into chains by connecting nerve cords, and which lie on each side of the front of the backbone in the neck, thorax, and abdomen.

Function of Sympathetic Nerves.—This double chain of ganglia, together with the multitude of smaller subordinate ganglia and branching nerve fibres which are connected with it, constitutes the *sympathetic nervous system.* This system gives off branches to the eye, the bloodvessels, the heart, stomach, intestines, etc.—in fact, to all parts of the body which contain involuntary muscle fibres and glandular tissue. The functions of contraction and relaxation of involuntary muscle and of glandular secretion are not under the control of the will, but are largely performed under the influence of the nerve cells of the sympathetic system, which, so to speak, are always 'on the spot.' For example, the bloodvessels in the different regions of the body are kept in a constant state of moderate contraction by means of the sympathetic nervous system, unless relaxation or further contraction of the vessels

of some special area is required. During digestion the sympathetic system relaxes the intestinal vessels in order to increase the supply of blood, and, under instructions from the medulla, the vessels of the limbs and of the surface of the body are then contracted to enable the general blood-pressure to be kept up. 'If you eat till you're cold, you'll live till you're old.' During muscular work the bloodvessels of the limbs are relaxed by the sympathetic system, and those of the intestines are then contracted by order of the medulla, so that the general blood-pressure may remain unaltered. We work voluntarily, but we digest involuntarily. Hence, if we work directly after a meal, and before the intestinal juices are secreted, the sympathetic system is not allowed by the medulla to dilate *all* the bloodvessels at once, and therefore those of the intestines remain contracted, and our meal is not properly digested.

The sympathetic nervous system thus possesses the power of controlling the state of the bloodvessels according to local needs, provided always that it does not receive contrary instructions from its chief, the medulla, which presides over the vital functions.

THE SPINAL CORD.

The spinal cord continues downwards from the medulla, or lower part of the intermediate brain, through the tunnel of the backbone, as far as the second lumbar vertebra. It is a firm, fleshy column of a whitish colour. It is about 18 inches in length, rather thicker than a lead pencil, and weighs about an ounce.

The Spinal Nerves.—Opposite every joint of the backbone it gives off a pair of nerves (right and left), thirty-one pairs in all. Those nerves which pass to the arms and to the legs are by far the largest, and the regions of the spinal cord from which these pass are somewhat thicker than the remainder, owing to the existence at these sites of a larger number of nerve cells.

Structure of Spinal Cord.—As will be seen in Fig. 10, the spinal cord consists chiefly of white matter, or nerve fibres, which run up to and down from the brain. In its centre, however, it contains a collection of nerve cells, or grey matter, which on section is shaped some what like a butterfly. At the front and the back of each wing of the butterfly may be seen the bundles of nerve fibres which form each pair of spinal nerves. The bundles which are attached to the smaller ends of the wings, and which possess a small oval thickening, or nerve ganglion (3), form the *sensory* portions of the nerve, and bring nervous impulses to the spinal cord from the part of the body from which the fibres forming them arise. On the other hand, the bundles which are attached to the larger ends of the wings form the *motor* portions of the nerve, and carry nervous impulses from the spinal cord to the part of the body to which the fibres forming them are dis tributed. The separate sensory and motor bundles unite at a little distance from the spinal cord on each side to form the pair of **mixed nerves.**

The sensory nerve fibres are each connected to nerve cells which lie, not in the spinal cord itself, but in the nerve ganglion, which is shown at 3 in Fig. 10. After passing through this ganglion the fibres enter the cord and run upwards towards the brain, giving off as they go numerous branches which pass across the grey matter to ramify around the nerve cells (about to be mentioned) which give origin to the motor fibres.

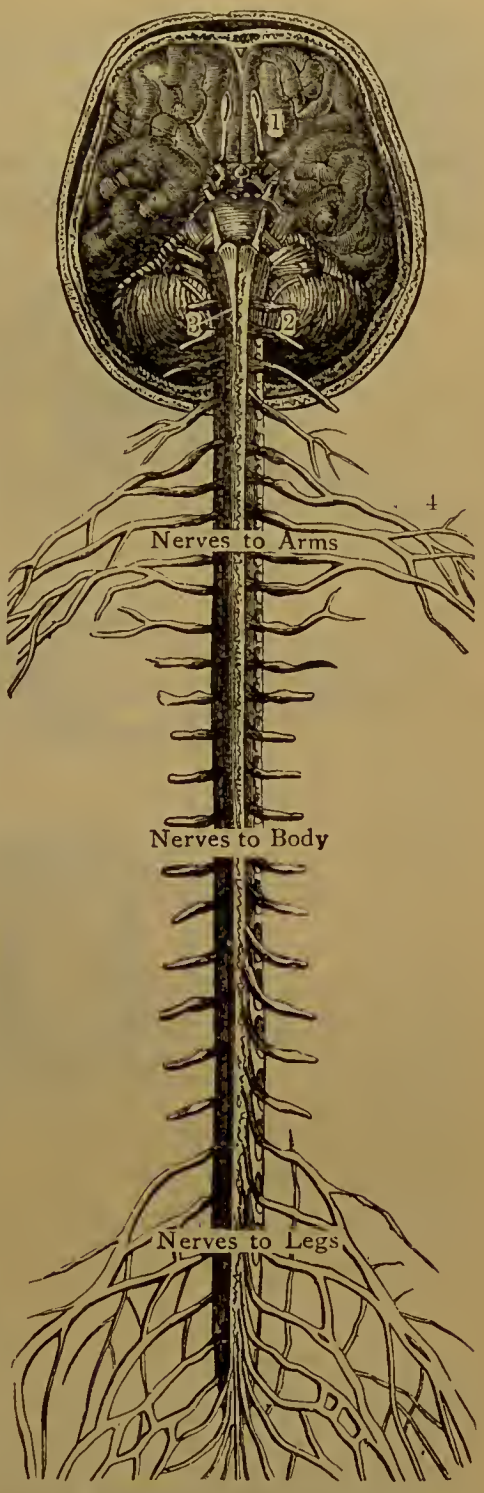


FIG. 9.—VIEW OF SPINAL CORD, SHOWING ITS CONNECTION WITH THE BRAIN.

1. The cerebrum, or brain proper. 2. The cerebellum, or lesser brain, 3. The medulla oblongata. 4. The cervical nerves.

The motor nerve fibres arise from nerve cells in the spinal cord just before they leave it. The horn of grey matter from which they pass is therefore larger than that near which the sensory nerve bundles enter.

Sensori-motor Path.—A sensory nervous impulse thus passes along a sensory nerve fibre from the sensory surface into the spinal cord. On reaching the spinal cord the impulse is distributed around

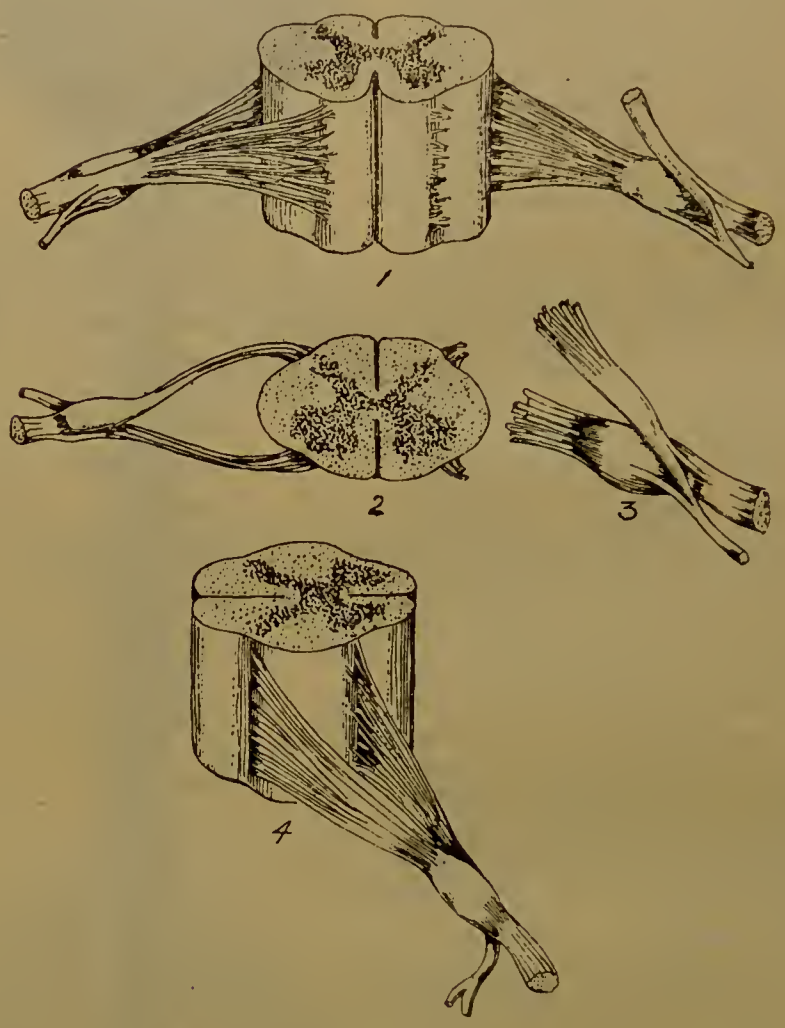


FIG. 10.

1. Piece of spinal cord seen from the front and above. The back nerve-root is sensory and the front motor. 2. Ditto seen from above. The upper root contains sensory fibres and the lower motor. 3. Nerve ganglion on the sensory root of a spinal nerve. 4. Piece of spinal cord seen from the side and above. The left root is sensory and the right motor. (After Quain.)

the neighbouring motor cells, and also is carried upwards to the brain. The sensory impulse then directly stimulates these motor cells of the spinal cord, and may thus cause a movement of the

muscles which lie in the neighbourhood of the sensory surface from which the sensory impulse came. The sensory impulse is also carried upwards to the brain, and thus we become conscious of the sensation. Further, by means of nerve fibres which pass down from the brain and branch around the motor cells of the spinal cord, we can both cause these motor cells to produce muscular movements by our will, and can prevent them from doing so under the influence of a sensory impulse.

THE FUNCTIONS OF THE SPINAL CORD.

The spinal cord, by means of its white matter, thus serves as a conductor to the brain of sensory impulses along the sensory nerve fibres, and as a conductor from the brain of motor impulses along motor nerve fibres.

The most important function of the spinal cord, however, is carried out, as would be expected, by the nerve cells which are contained in it. This is called **reflex action.**

A reflex action may be defined as an *immediate motor response to sensory stimulation.* It is the simplest function of nervous matter, and is performed not only by the spinal cord, but by many other parts of the nervous system.

The nervous mechanism needed for a reflex action will be easily understood from the remarks which have just been made concerning the structure of the spinal cord. There must be a sensory surface to receive the sensory stimulus, a sensory nerve fibre with its nerve cell to carry it inwards, a motor nerve cell to be affected by it, a motor nerve fibre belonging to this cell to carry the resulting motor impulse outwards, and, finally, a muscle fibre to react to the motor impulse.

If the sole of the foot be tickled, a nervous impulse passes along certain sensory nerve fibres to the spinal cord, and across the grey matter of this to the neighbourhood of certain motor cells. These cells are stimulated by the sensory impulses, and as a result send out motor impulses along their motor nerve fibres to the muscles in which they end; in consequence the leg is withdrawn. This constitutes a reflex action, and it may take place by means of the spinal cord even when we are

asleep. The sensory impulse, of course, also passes up the spinal cord to the brain, and, if we are awake, makes us conscious of the sensation; but this fact has nothing to do with the reflex action, as the following examples show:

If the palm of a sleeping person be gently tickled, the fingers close by reflex action. If a man be paralyzed in both legs owing to a broken back, his legs will move if the soles of his feet be tickled. In the first of these instances, the brain is asleep and does not feel the sensory impulse. In the second, the sensory impulse cannot pass up to the brain owing to the injury to the spinal cord in the back. In both cases the reflex action is carried out by the spinal cord, and it is performed even more readily than would occur in a normal person who was awake; for here the brain might interfere with or prevent the reflex action, provided that it knew it was likely to occur, and was therefore prepared for it.

For example, one of the common reflex actions is known as the 'patellar reflex' or 'knee-jerk.' If the tendon below the patella be tapped, the leg is jerked forwards. Any nurse is aware that, if the attention of the patient be not distracted, the knee-jerk may be difficult or impossible to obtain.

Some reflex actions, however, cannot be prevented by the brain. If we touch a hot surface with the finger, this is withdrawn by reflex action, perhaps into the mouth, before we feel the sting of the burn. If, when walking barefoot, we tread on a tack, we jump, and perhaps even take hold of the foot before we feel the prick.

Other reflex actions take place by means of the intermediate brain. For example, whether we will or not, if the eye be touched, we wink. Again, if food be placed in the pharynx, we swallow by reflex action, and this can occur even in a patient who is unconscious from apoplexy. If we tell such a person to swallow, he does not hear us, owing to the injury to his cerebrum; but if we drop some liquid into his mouth, the tongue moves and the liquid is thrown back into the pharynx and swallowed.

Finally, many reflex actions of which we are unaware are constantly taking place by means of the sympathetic nervous system—for example, dilatation and contraction of the blood-vessels, secretion of the digestive juices, etc.

Automatic Action.—We do not require to learn how to perform reflex actions. The nervous system is able to carry them out without practice as soon as it is developed.

Certain complicated actions, however, *which at one time we have required to learn by means of voluntary attention, and of which at that time we were fully conscious*, are constantly being performed by us quite unconsciously. The brain at one time directed the learning of these. They can afterwards be performed by the lower nervous system alone. Such actions are called *automatic actions.*

We can walk for miles whilst engaged in conversation, and without paying any attention to our walking. We can ride a bicycle as easily and as unconsciously as we can walk. A skilful knitter can knit automatically whilst talking, attending a performance, or even when almost asleep. A skilled pianist can engage in intelligent conversation whilst he is automatically executing difficult pieces of music. A somnambulist, whilst his higher brain is asleep, can automatically perform most complicated and difficult feats.

THE CRANIAL NERVES.

There are twelve pairs of cranial nerves, which roughly run in series with the thirty-one pairs of spinal nerves.

As the spinal nerves arise from the spinal cord, so the cranial nerves arise from the intermediate brain, with the exception of the first or olfactory (smell) and the second or optic (vision), which have special modes of origin from the under surface of the cerebrum.

The cranial nerves differ from the spinal or mixed nerves, which contain both sensory and motor nerve bundles, in the fact that some are purely sensory and some are purely motor, whilst some are mixed like the spinal nerves.

The cranial nerves may be roughly divided into three groups :

1. *Sensory nerves to organs of special sense*—the nose, eye, ear, and tongue.

2. *Sensory and motor nerves to the skin and muscles of the face*, including the eye.

3. *Nerves from the medulla* to the tongue, pharynx, larynx, lungs, œsophagus, stomach, and heart.

THE SENSES: SMELL, SIGHT, HEARING, TASTE, TOUCH, AND MUSCULAR SENSE.

I. The nose, the olfactory nerves, and the sense of smell.

Compared with many of the lower animals, we possess but a poor sense of smell. Our capabilities in this direction are limited to the

appreciation of a number of *odours and perfumes*, such as musk, violets, etc., and *flavours*, such as those of apples, pears, grapes, etc.

If the nostrils be stopped, we cannot tell an apple from a potato or a pear from a turnip. Such flavours are appreciated by the sense of smell, and not, as is often thought, by that of taste. Again, we speak of the smell of ammonia, sulphur, or chloros, but none of such irritant vapours is appreciated by the sense of smell. We are conscious of their presence because they irritate the skin or mucous membrane of the nose. We thus *feel*, though we usually say that we *smell*, them.

Sensations of smell result from the stimulation of the delicate fibrillar terminations of the olfactory nerves in the mucous membrane of the upper and hinder part of the nasal cavity. The olfactory nerves carry the sensations of smell direct to the under surface of the cerebrum.

II. The eyes, the optic nerves, and the sense of sight.

By means of the sense of sight we appreciate the form and colour, and also the position, size, distance, relations to one another, and movements, of the objects around us.

The eye, or organ of sight, is similar in structure to a photographic camera.

A camera is a box which is closed except for an opening in the front, in which a lens is inserted. By means of the lens, inverted images of objects are produced at the back of the camera. In order that a sharp image may be produced, the camera possesses a bellows by means of which the back may be placed at the proper distance from the lens, as this varies according to the distance of the objects which are being photographed. To take a photograph, the screen on which the object has been focussed is replaced by a sensitive photographic plate, and an image is produced on this by the action of light.

The eye is a globe with an opening—the *pupil*—in front, and a *lens* just behind the pupil. At the back of the eye is the *retina*, a thin membrane which represents a photographic plate. The space between the lens and the retina contains, not air, but a transparent jelly-like substance. In a camera the object is focussed by moving the screen by means of the bellows. In the eye the object is focussed by an alteration in the shape of the lens, the retina remaining in the same place. In both cases, however, a sharp inverted image of the object is produced on the screen or retina. We are able to alter the shape of the lens of the eye by a muscular act called *accommodation*, which is partly under the control of the will. When using a camera, 'stops' of different sizes are placed in front of the lens in order to let in a larger or smaller amount of light. In the case of the eye, the pupil becomes smaller or larger according to the intensity of the light, by a reflex action which is not under the control of the will.

In the camera an image is produced on a photographic plate

which is sensitive to light. In the eye a sensation is produced by stimulation of the complex and delicate terminations of the optic nerves in the retina. The optic nerves carry the sensation to the under surface of the cerebrum. Here each optic nerve divides into two halves, right and left ; and after a complicated course the two right halves arrive at the hinder end of the right hemisphere of the cerebrum, and the two left halves arrive at the hinder end of the left hemisphere of the cerebrum. Hence the sight area of *both* cerebral hemispheres is stimulated by light sensations coming from *either* eye. If this were not the case, whenever we closed an eye we should find the opposite half (for the retinal image is upside down) of the visual field become black. As it is, we see equally well with either eye, though better by means of both.

III. The ear, the auditory nerves, and the sense of hearing.

By means of the sense of hearing we appreciate the different qualities of sound. We can tell a loud sound from a faint one; we can distinguish between the different notes of a musical instrument ; we can tell the difference between the sound of a piano and that of a violin. We thus, by means of the organ of hearing, are able to appreciate the *intensity*, the *pitch* and *quality* of a sound. We are, in addition, able to hear several sounds at once, as when listening to an orchestra or a choir.

Sound is due to vibrations or waves of air which are set up by various means. These air-waves enter the outer ear, and, passing along a short circular canal, impinge on a thin circular membrane—the drum of the ear. This 'drum' is caused to vibrate by the air-waves, and by means of a delicate and complicated mechanism these vibrations are eventually transmitted to the complex and minute fibrillary terminations of the auditory nerves, and cause in these a sensory stimulus. This sensory stimulus is carried along the auditory nerves to the intermediate brain, and thence to the surface of the hemispheres of the cerebrum.

IV. The gustatory nerves and the sense of taste.

Sensations of taste are of four kinds—*sweet*, *acid*, *salt*, and *bitter*. The taste of sugar is an example of the first of these, that of vinegar of the second, that of table salt of the third, and that of quinine of the fourth. Flavour of articles of food is not appreciated by the sense of taste, but, as has been stated, by the sense of smell.

Sensations of taste are caused by stimulation of delicate sensory end-organs called *taste-buds*, which lie in the mucous membrane of the tongue, and in which end the terminal branches of the gustatory nerves. These sensations pass along the gustatory nerves to the intermediate brain, and thence to the surface of the hemispheres of the cerebrum.

V. Skin sensation, or the sense of feeling.

The sense of feeling lies, not in any special part, but throughout the skin of the body. The skin in some parts of the body is, how-

ever, more sensitive than it is in others. It is especially sensitive over the palmar surfaces of the fingers and over the eyes and the lips; whilst over other parts, like the back and the scalp, it is relatively insensitive.

We derive four kinds of sensation from the skin—namely, those of *heat*, *cold*, *pain*, and *touch* or *pressure*.

Skin sensations are conducted by sensory branches of all the spinal and of the fifth cranial nerves, and the manner in which these sensory nerves end in the skin has already been described. The sensory impulses are conducted along nerve fibres upwards through the spinal cord and the intermediate brain, and after a complicated course they end on the surface of the cerebrum. Skin sensations from the left half of the body pass to the right cerebral hemisphere, and from the right half to the left cerebral hemisphere.

VI. The muscular sense has been described on p. 176.

THE GREAT BRAIN, OR CEREBRUM.

This consists of two halves, or hemispheres, the right of which is connected with the left side of the body, and the left with the right side of the body. Innumerable nerve fibres pass between the right and the left hemispheres of the cerebrum, and thus enable the two halves to act as one organ.

A photograph of a left cerebral hemisphere is inserted as Fig. 11. This gives a clearer idea of the appearance of the cerebrum than would be formed from a study of the earlier diagrams alone. The different regions of the hemispheres are named after the skull-bones under which they lie. The large portion to the left of the photograph lies under the frontal bone, and is called the *frontal lobe*. That at the right end of the photograph lies under the occipital bone, and is called the *occipital lobe*. The upper portion between these lies under the parietal bone, and is called the *parietal lobe*. The lower portion lies under the temporal bone, and is called the *temporal lobe*.

The cerebrum is the organ of mind. By means of it we possess consciousness, and we feel, think, and act.

Many of the lower nervous centres, especially the spinal cord, are able to perform *reflex actions;* that is, they receive

sensory impressions, and, as a result, send out motor responses. When left to themselves, the sensation, if strong enough, invariably results in the movement in a purely

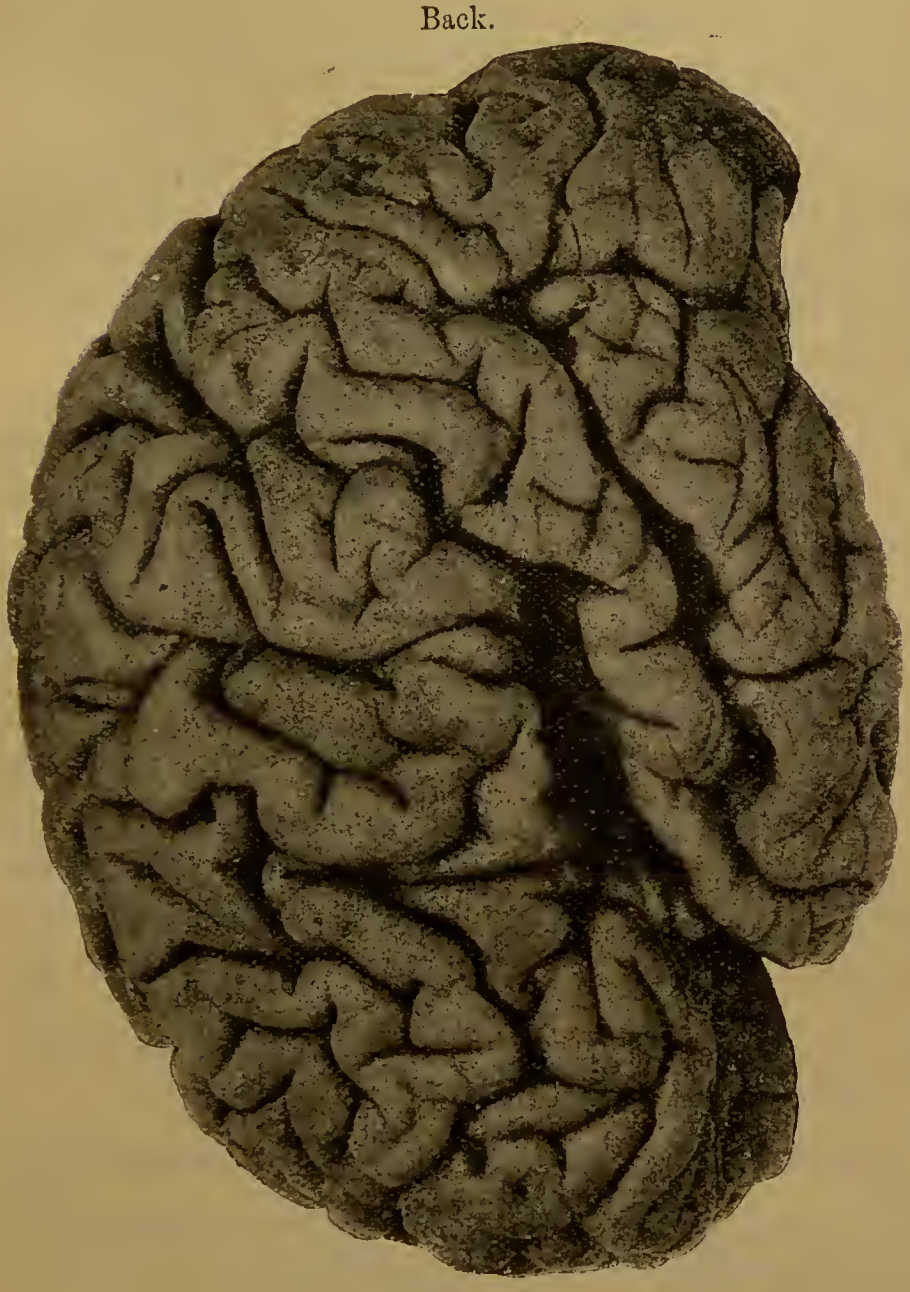


FIG. 11.—THE LEFT HEMISPHERE OF THE WELL-DEVELOPED BRAIN OF A BUSINESS MAN.

mechanical manner. These centres resemble in their certainty of action a watch, which when wound up runs down, or an electric bell, which rings whenever, or as long as ever, the

push is pressed. They have no consciousness of what they do, and they have no choice as to whether they do it or not.

This is not the case as regards the cerebrum. This organ *receives sensory impressions* of all kinds; it *stores* its experiences as memories; it *compares present with past experience;* and, finally, it *acts or does not act* after deciding whether action is advantageous or the reverse.

If the sole of the foot is tickled, the leg is at once withdrawn by reflex action by means of the spinal cord, and this result invariably ensues unless by means of the cerebrum we have previously decided to keep the leg still. Left to itself, the spinal cord would always withdraw the leg.

If a man hits us on the cheek, however, we do not at once hit him back, for the cerebrum decides whether it is prudent to do so or not, and may prefer that we should present the other cheek or turn away.

If we are walking along a road and meet a motor-car, our first impulse is to dash out of the way; but the cerebrum decides whether we should do so, continue walking, stand still, or, if we are suicidally inclined, get in the way of it.

The functions of the cerebrum, therefore, like those of the lower nervous centres, begin with sensation and end with action; but the cerebrum, in addition, has memories of former sensations and of former acts to fall back on, and choice as to what action, if any, should be performed.

THE GENERAL COURSE OF SENSORY AND MOTOR FIBRES TO AND FROM THE CEREBRUM.

The cerebrum receives sensations or sensory impressions of all kinds.

Except in the case of sensory impulses from certain special senses, which pass to *both* cerebral hemispheres, sensory impressions from each side of the body pass to the *opposite* cerebral hemisphere.

The sensory fibres which enter by the spinal nerves pass up the spinal cord to the intermediate brain, where they branch around other sensory nerve cells. In the intermediate brain all the sensory impulses (excepting those of smell and sight, which enter higher up) are handed on to the new nerve cells, and the nerve fibres belong-

FIG. 12.

The course of the sensory nerve fibres is indicated on the left side of the diagram, and that of the motor nerve fibres on the right side. In each case, therefore, the course of these is only indicated to the point at which the fibres pass to the opposite side. (After Gordinier.)

ing to these cross over to the opposite side, and are then continued upwards to end in special regions of the grey matter of the cerebrum.

In the left side of Fig. 12, sensory fibres are seen entering the left side of the spinal cord and passing upwards to the intermediate brain, where they branch around new nerve cells, from which fibres pass over to the other side. The further course of these to the right cerebral hemisphere is omitted. In the upper part of the left side of the diagram, the branching endings, in the grey matter of the left cerebral hemisphere, of sensory fibres from the right side of the intermediate brain are also shown. Their further course from the right side of the body is omitted.

Course of Motor Impulses.—The cerebrum sends out motor impulses from nerve cells, lying in a special part of its grey matter, to all parts of the body. The motor impulses from each cerebral hemisphere pass over to the other side on the way down, and thus end on the opposite side of the body.

The motor nerve fibres arise from motor nerve cells in the grey matter of each cerebral hemisphere, and pass down to the intermediate brain, where they cross over to the opposite side and run down the spinal cord, to end in branches round the motor cells of the spinal cord. From these motor cells, motor fibres carry their nervous impulses outwards along the motor nerves to the muscles.

In the right side of Fig. 12, motor cells are shown in the grey matter of the cerebrum, and the course of the motor fibres from these is traced downwards to the intermediate brain, where they cross over to the other side. Their further course to the left side of the body is omitted. In the lower part of the right side of the diagram are shown motor nerve fibres ending in muscle fibres, and their course from the left side of the intermediate brain is indicated. Their further course from the left cerebral hemisphere is omitted.

THE STRUCTURE OF THE CEREBRAL HEMISPHERES.

The cerebral hemispheres are, as has been stated, the most important parts of the brain. They weigh about 20 ounces each, and together form the great brain, or cerebrum.

Structure of Cerebral Hemispheres.—Like the nervous system generally, they are composed of *white matter*, or nerve fibres, and *grey matter*, or nerve cells. Both white and grey matter are supported by a peculiar binding tissue called the *neuroglia*.

The nerve fibrils attached to each nerve cell are so numerous,

FIG. 13.

Layer I. : Outer fibre lamina. Layer II. : 'Pyramidal' or outer cell lamina. Layer III. : Middle cell lamina. Layer IV. : Inner fibre lamina. Layer V. : Inner cell lamina.

long, and complex that they in bulk form the greater part of the *neurone*, or nervous element. The nerve cells may roughly be compared to electric batteries, and the fibrils to electric wires. There is therefore much more white matter than grey in the nervous system. Thus, the spinal cord is composed chiefly of nerve fibres, and the nerves are composed entirely of nerve fibres. Similarly, though to a much less marked extent, the larger part of the cerebral hemispheres is composed of white matter.

The grey matter lies as a continuous layer of about $\frac{1}{4}$ inch in thickness over the surface of the cerebrum. It covers the surfaces of the convolutions, and it lies along the sides of and across the bottoms of the furrows. It is called the *cortex*, or rind of the brain, and might be likened to the peel of an orange.

Though somewhat smaller in quantity than the white, the grey matter is the most important portion of the cerebral tissue, as in it are received and generated the nervous impulses which pass to and fro in the cerebrum itself, and from and to the other parts of the nervous system.

Structure of the Grey Matter.—The nerve cells lie throughout the grey matter, as is shown in Fig. 13. There are several separate layers of nerve cells of different kinds, and these several layers possess different functions. The layer which is marked II. in the figure is, however, the deepest of these. It is called the *pyramidal layer*, from the shape of the cells contained in it. It is essentially the cell layer of the human brain, and it contains the nerve cells by means of which we think.

The remaining and deeper cell layers of the grey matter are proportionately and actually almost as well developed in the lower animals as in ourselves, and form the source of the mental powers which we share with them.

It is not easy to give an idea of the great complexity of the human brain, but this is suggested by the statement that it contains thousands of millions of complicated neurones, or

nervous elements, the nerve cells of which lie in the grey matter.

The grey matter, however, does not merely contain nerve cells; in it also lie the complicated branches of these cells, which spread from each cell like the roots of a tree, and also the commencement of the long and branching nerve fibril, or axone, which runs in the white matter.

Fig. 14.

A drawing of the numerous nerve fibrils which lie in the grey matter is shown in Fig. 14.

The individual nerve cells of the grey matter are usually triangular or pyramidal in shape, with the point upwards, and in their general appearance somewhat resemble a carrot turned upside down and seen from the side.

To give an idea of the complexity of the human nerve cells, drawings of the nerve cells of the frog, the lizard, the rat, and man are compared in Fig. 15 as 1, 2, 3, and 4.

This illustration gives a good idea of the relative appearances of the nerve cells in these animals, but it must also be remembered that the *number* of nerve cells in the human brain is beyond comparison greater than in the frog, lizard, and rat, whilst the *actual size* of each cell is about the same in all.

In the upper part of the figure, at 5, 6, 7, 8, and 9, is shown the manner in which the nerve cells gradually spread their processes as the brain develops. At a certain stage in the development of the brain of the infant, its nerve cells are thus as simple in structure as are those of the adult frog.

FIG. 15.

1. Neurone of the brain of the frog. 2. Ditto of the lizard. 3. Ditto of the rat. 4. Ditto of man—5, 6, 7, 8. 9, indicate the various stages which the neurones of the human cerebrum pass through during the course of their development. (After Ramon y Cajal.)

THE FUNCTIONS OF THE CEREBRUM.

The cerebrum is the organ of mind. By means of it we are conscious, and we feel, think, and act.

We **feel or receive sensations** by means of our senses. We thus see, hear, taste, smell, and feel, and become conscious of the position and movements of our limbs. Further—and

here especially we differ from the lower animals—we possess *language*, which we can both hear and read.

These sensations are stored by the cerebrum as *memories*. We compare memories of sensations, and elaborate them into *ideas;* in other words, we **think**. As the servant of thought —for without it we could not think to any purpose—we possess language.

We further **act**, but in order to act we have to learn how to act. The various actions we perform are not done by instinct, but require to be laboriously learned. We cannot speak, sew, write, or play the piano, without being taught and without much practice. All these skilled actions are learned by means of our cerebrum before we can properly perform them. We thus *learn how to act* before we can act. Further —and this is the highest function of the brain—*we possess the power of choice;* in other words, we can decide *whether to act or not*. If a dog smells a scent, it follows it; if it sees a rat, it chases it; if it hears a noise, it barks; and it is only through the fear lest it should receive thrashings similar to those it has previously experienced that it can be prevented from giving way to its motor impulses.

Man does not thus give free play to his instinctive impulses. He, like the dog, experiences sensations, but he reasons, chooses, and finally acts or does not act as the result of mental processes not possessed by the dog. Finally, he possesses the power of articulate speech, which is the highest form of action.

Sensations do not produce in man merely the simple feelings of desire, rage, fear, or love of offspring, which are exhibited by the dog; but, in accordance with the possession of powers of thought, he is also capable of such **emotions** as admiration, reverence, and esteem, and the appreciation of beauty, justice, and morality.

The manner in which the cerebrum performs its functions will now be briefly described.

The various sensations, according to their kind, pass to the grey matter of certain special regions of the cerebrum, and stimulate the

nerve cells which lie there. These **sensory regions** are indicated on the diagram of the left hemisphere which is shown in Fig. 16.

In the grey matter around these regions, but particularly around those connected with sight and hearing, are stored the memories of former visual and auditory sensations.

In the region termed 'Psycho-motor' lie the nerve cells by means of which we learn, and in which we afterwards store the memories of how to perform skilled voluntary movements of various kinds, such as dancing, sewing, writing, giving rise to facial expression, etc.

In the region marked 'Speech' lie the nerve cells, in which is stored the power of speech or the mechanism by means of which we

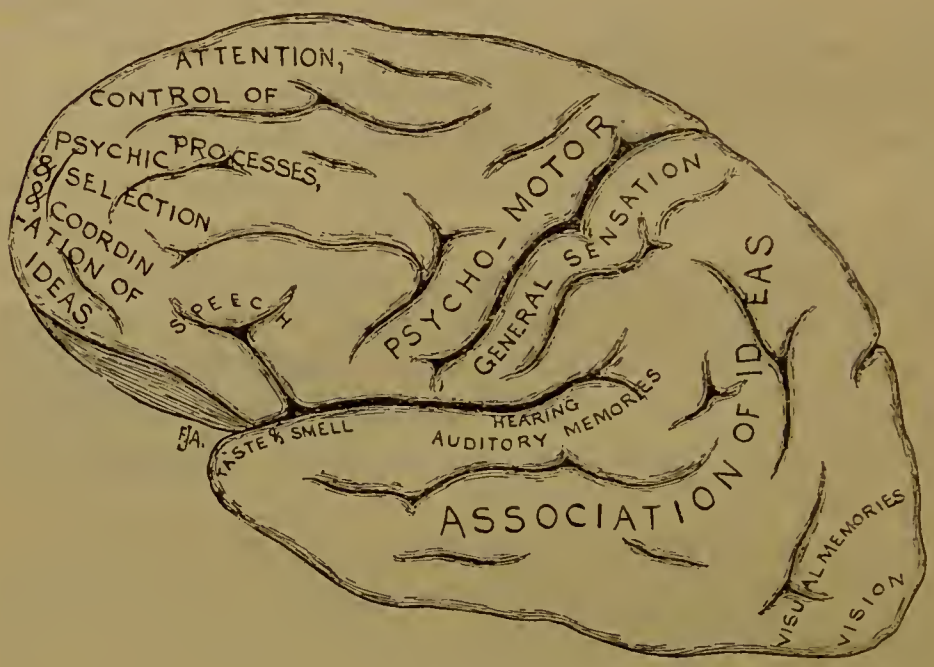


Fig. 16.

have first learned, and can afterwards practise, the muscular movements which result in articulate language. It may be added that, as the left hemisphere is connected with the right side of the body, and as the majority of people are right-handed, writing and speech are, except in left-handed persons, represented in the left cerebral hemisphere only.

The hinder half of the cerebrum may thus be roughly stated to contain the materials for thought, and the front half the mechanism for action.

Thought is, however, a much more complex operation than can be shown in a diagram, and in its simplest form **involves the employment of almost the whole cerebrum.**

For example, the sensation experienced on beholding a cat does not merely excite the visual memories of cats previously seen,

though often it at once reminds us of the last cat we saw. We rapidly recall the sensation of stroking a cat's fur, the mew of a cat, the scratch of a cat, the various colours of cats, the appearance of kittens, the smell produced by cats, the delicate manner in which cats eat or lap milk, the rapidity of their movements, their persistence in endeavouring to obtain what they desire, their nervousness, and their fear of dogs.

Again, we recall the written word 'cat,' and the spoken word 'cat,' and the letters 'c-a-t,' and the movements employed for writing 'cat.'

We may then compare cats with dogs as different kinds of animals, and cats with lions and tigers as similar kinds of animals. From a different aspect we may next think of 'rat,' which arouses a further host of memories; and these may then remind us of 'mouse,' which by the memory of the smell of a mouse may remind us of herrings. This may then suggest, in turn, fish, the catching of fish, 'loaves and fishes,' the Sermon on the Mount, patients' dinners, the hall in which the patients dine, the last entertainment held there, the appearance and voices of certain performers, etc.

In this manner any sensation at once arouses hosts of more or less related memories without any definite effort. If the above list of memories be compared with the diagram, it will at once be seen that, as the separate memories are revived one by one, first this and then that part of the cerebral cortex is employed, until the whole of the hinder half is in action. The cerebrum, in other words, is acting as a machine without any controlling power being brought into play, and without any visible result or action being evident.

Many maniacs constantly employ their brains in this manner, and, by using the whole of the cortex with the exception of the part which lies quite at the front, give evidence of this by their speech and actions. In such patients the whole of the brain, except the front and most important portion, is in action. In them sensations excite memories, and these result in action and speech, which latter is uncontrolled, rapid, and often incoherent.

For the proper performance of mental functions, however, the *whole* cerebrum is necessary.

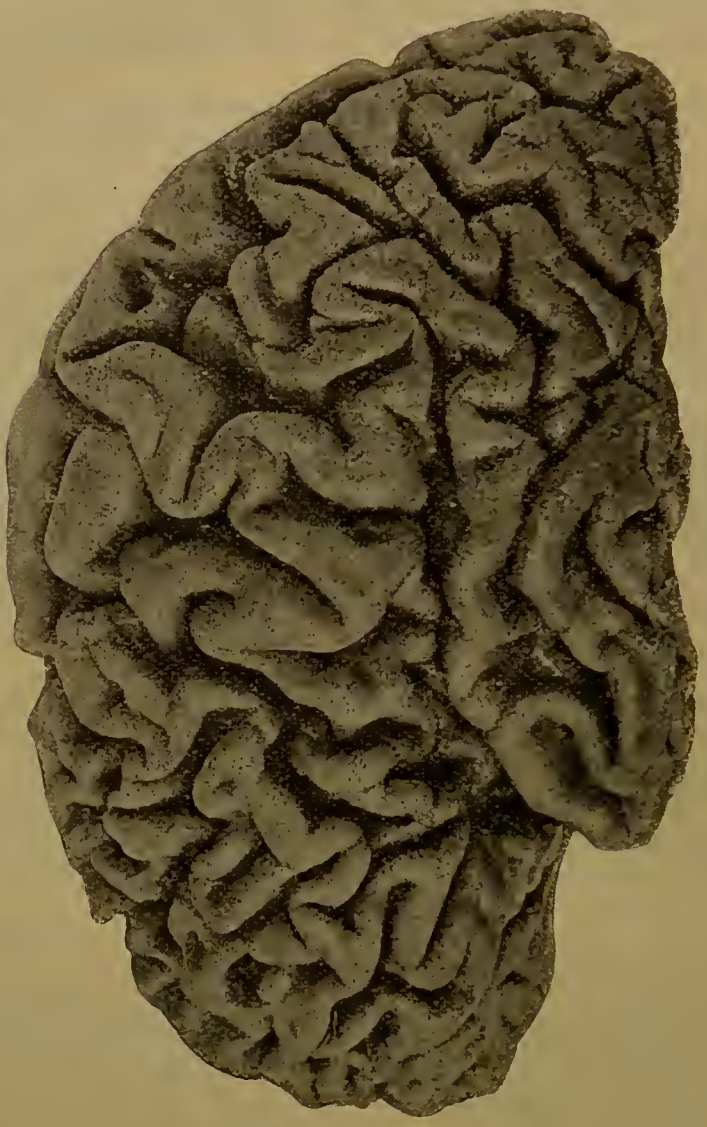
The hinder and lower portion supplies sensations and memories; the middle portion and that marked 'Speech' supply the mechanisms for producing skilled action of every kind; and the anterior portion directs and controls the whole.

By means of the front part of the cerebrum we can exercise voluntary attention; we can pick out one or more sensations from the numerous sensations we are constantly receiving; we can isolate particular memories from the host of memories which are recalled; we can follow a connected train of thought—in other words, we can 'keep to the point' in thinking; we can choose and decide; and, lastly, we can act, by speech or otherwise, if we have thus decided.

In short, by means of the cerebrum, *we feel*, *think*, and *act*.

'*We*' is represented in the extreme front of the cerebrum; '*feel*' is represented where the names of the senses are placed in the diagram; '*think*' is represented in the parts where memories are stored and in the part marked 'Association of Ideas'; finally, '*act*' is represented where are placed the terms 'Psychomotor' and 'Speech.'

Back.



Top. Bottom.

Front.

FIG. 17.—THE LEFT HEMISPHERE OF A CASE OF GROSS DEMENTIA.
The extremely marked wasting of the front portion should be noted.

In early general paralysis and in many insane persons 'we' is abnormal, resulting in grandeur or self-depreciation.

In acute mania 'we' is suppressed, and the cerebrum is a pure machine which acts reflexly and automatically.

In dementia 'we' is lost, 'act' is deficient, 'think' is imperfect, and 'feel' is present, but is of little use, as very few memories are awakened by sensations.

In idiocy 'we' is not developed, 'think' is very poorly developed, 'act' is in consequence poorly developed, and 'feel' is often the only part which is reasonably existent.

In gross dementia the cerebrum is largely lost and practically out of use, and the patient has become as an idiot is born.

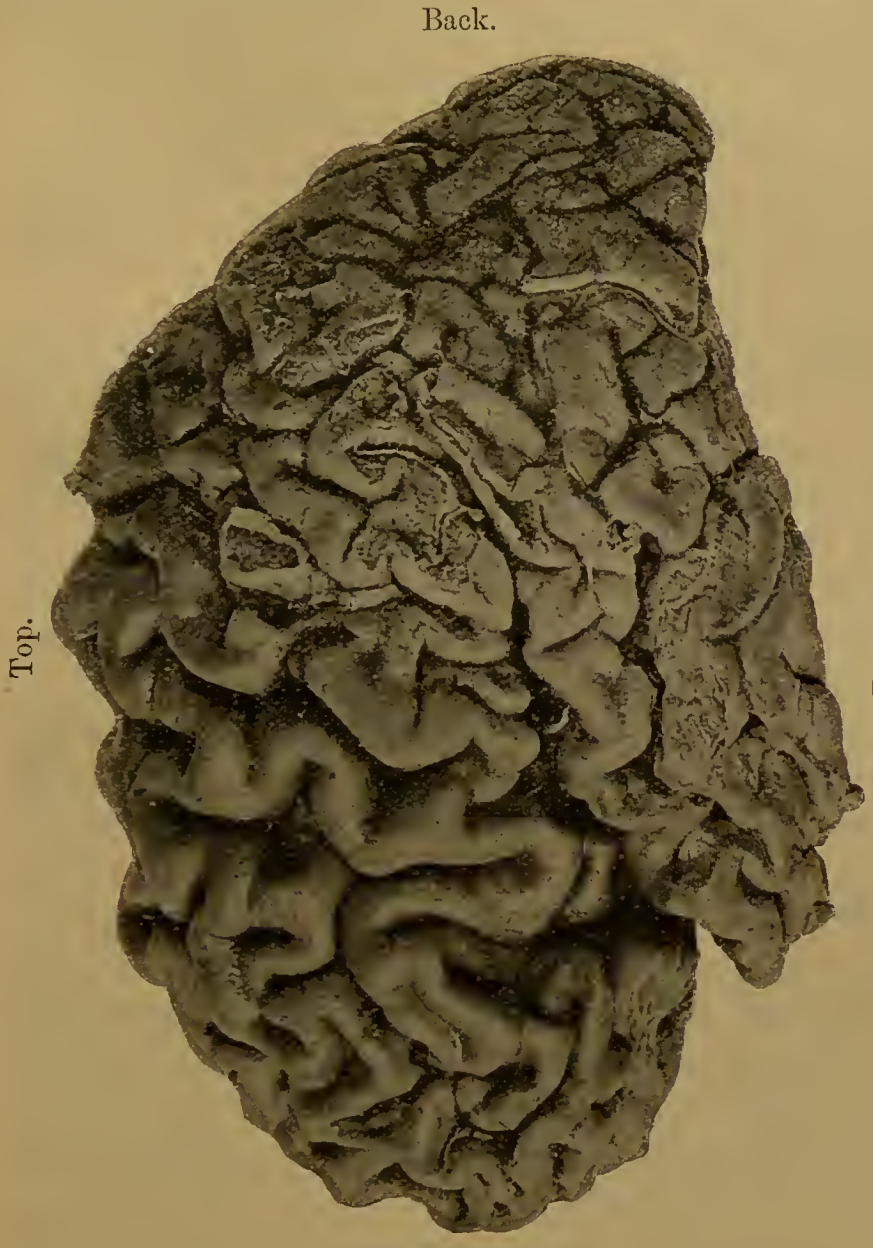


FIG. 18.—THE LEFT HEMISPHERE OF A CASE OF ADVANCED GENERAL PARALYSIS. The front part is extremely wasted, and the portions below and behind this are much diseased.

In Figs. 17 and 18 are shown the left hemispheres of a case of gross dementia and of a case of advanced general paralysis. On comparison of these with Fig. 11, it will at once be seen that the front of the cerebrum (the 'we') is extremely wasted, and that the greater part of the remainder is also wasted or diseased.

SECTION II

MIND

We know that the brain is the chief centre of the nervous system, and that all the nerves of the body are, directly or indirectly, connected with it. We know that our brain regulates the movements, sensations, and nourishment of every part of the body. But the brain has yet another function: it is the **organ of the mind.** Now, the mind is complex in its constitution, and we are still very far from having a complete understanding of it or an accurate knowledge of its working. Nevertheless, it is very necessary to try and understand something of what we mean when we speak of the normal *mind.* Just as the body is composed of bones, muscles, nerves, and organs, so we can look upon the mind as being made up of a number of parts, such as sensations, feelings, memory, etc. When we study the body, we have something to see and feel, and something *objective*, which forms the experience of everyone; whereas when we try to understand about the mind, it is purely *subjective—i.e.*, what we ourselves think; consequently the study lacks the definiteness that surrounds those things which we can actually see.

During the next few pages we must try and learn in as simple a manner as possible some of the attributes of mind.

Sensation.—By a sensation we mean the most simple of all conscious processes, and it is occasioned by the stimulation of some bodily organ. Broadly speaking, there are two kinds

of sensation: (1) *special sense sensations;* (2) *organic sensations.* Now, sensations are classified by reference to the organ of the body from which they originate, such as sight to the activities of the eye, sound to the ear, touch to the skin, taste to the mouth, and smell to the nose. In reality, the matter is not so simple as this; for instance, the sensations derived from the ear are not purely those of hearing, but are also associated with our co-ordination of movements. Nevertheless, from the attendants' standpoint, it will be sufficient for them to understand that a special sense sensation is produced by stimulation of one of the special sense organs, such as the eye or the ear (p. 187). Now, the properties of sensation are (1) *quality*, (2) *intensity*, (3) *duration*, and (4) *extent.*

Quality is the attribute by which we distinguish one sensation from another; for example, a colour is always the same colour no matter how intense or for what length of time it lasts. Also sensations differ from one another in *intensity*, and in the case of sight, touch, and hearing there is also *duration* and *extent* to be considered. Sensations arising from the skin include those of touch proper, pain, plus distinction between heat and cold; also more complex sensations may be set up, such as itching and tickling, but these are mainly organic, and commonly result from changes in the blood-supply to the part. We have already stated that the reader has to distinguish between the special sense sensations and 'organic' sensations; these latter are derived from the muscles, tendons, articular surfaces, alimentary canal (hunger, thirst, nausea), and the circulatory system, respiratory system, etc. The organic sensations are more diffuse (not localized to one organ), and are more closely connected with the feelings of the individual. For instance, a number of persons may enjoy a beautiful view, but a sensation of nausea is purely subjective (felt by the individual). Thus it will be understood that, if we are constantly being distressed by unpleasant organic sensations, such as a gnawing sensation in the abdomen, it may dominate our mind, and may lead to erroneous ideas which are commonly

spoken of as delusions. This condition is very common in the insane.

Feelings and Emotions.—When we have a sensation, it either gives rise to a feeling of pleasantness or unpleasantness, which is usually spoken of as an affection. Now, if this pleasantness or unpleasantness becomes so strong as to outweigh the sensation which has given rise to it, we speak of it as **feeling**. If matters go still further, a feeling may pass on to what is spoken of as **emotion**. Here organic sensation plays a prominent part. When affection gives rise to feeling, certain bodily changes take place, such as alteration in the rate of the pulse, which becomes slower or more rapid; and the same with respiration. Now, with emotion the bodily changes are much more extensive, for here the organic sensations are affected. The person moved by emotion shows change in his secretory organs: he weeps; the saliva is increased, or the mouth is parched; the body may be bathed in perspiration, etc. If the emotion becomes more marked, the state is spoken of as one of **passion**, which is a violent condition only lasting for a time and then dying down, and the person may pass into what is called a **mood**. Disturbances of the feelings and the emotions are very common in certain forms of insanity, as, for example, in melancholia and in mania.

Sentiment.—This is similar in many ways to an emotion, but is distinguished from the latter in that it is expressed during active attention. There are many forms of sentiment—for example: (1) *Of right or wrong;* (2) *of truth or falsehood;* (3) *of belief or disbelief;* (4) *of beauty or ugliness* (*æsthetic sentiment*). Now, in mental disease the various sentiments are disordered. The maniacal or depressed person becomes careless about dress (æsthetic sentiment), or the former may be decorative. Doubt, again, is a prominent symptom in the insane.

Attention.—Our mental processes do not all flow along at the same level. We try to fix our thoughts on some things, or, in other words, to *attend to* them; but *active attention* is something more than concentration on one thing or on one

group of things. It has another side, which is that of dissociating our thoughts from those sensations or thoughts that are not required at the moment. In this way the things that we attend to become clearer in consciousness, and the memory of them lasts longer. Now, with this concentration of our attention upon some particular object or idea, we notice there are certain bodily changes taking place; for example, the head is fixed and the person may hold his breath. In addition to the active attention, there is a state which is spoken of as *passive attention*. Certain things have to be attended to whether one wishes it or not, as, for instance, loud sounds or bright lights. We are largely dependent upon passive attention for warning us of any impending danger. It must be borne in mind that attention is not thoroughly developed until childhood is past, and some children never acquire it. Now, in mental fatigue and in most insanities the power of active attention is lost quite early. The man who is becoming depressed cannot attend to his business, and the melancholic mother cannot attend to her household or the children: for action is usually the result of attention, and the person whose power of attention is failing begins to work poorly or to be idle; he can no longer read, write, or carry out his employment.

Perception.—The reader has learnt what is meant by a sensation, and he must now understand what is meant by *perception*. When we have some definite external *stimulus* producing a sensation, and when it has been perceived or recognized what that sensation is by comparing it with the memory of similar sensations that we have previously received, we speak of this as 'perception.' For example, I see a piece of wood, but I recognize that it is in reality a pencil, for it is similar to other pencils that I have seen. The insane person may see the article, but may not be able to perceive what it really is.

An **Idea** is the mental image of a former sensation. For instance, I see a book in front of me—that is a perception; whereas if I close my eyes I have a mental record of the

former sensation derived from seeing the book, and that is an idea.

Association of Ideas.—By this we mean the tendency of every idea to bring into mind former ideas that were associated with it. For instance, we may be walking on the road, and suddenly we hear the sound of a motor-horn, and we at once associate it with a motor-car; or we hear a bark, and a dog at once comes to mind. This is known as simultaneous association. Or we may pass into a state of reverie, and then thought after thought passes through our mind, each new thought giving rise to the next; and this is spoken of as successive association. Wrong association may give rise to illusions; these erroneous ideas may be corrected, as in the sane person, but may persist and be believed in by the insane man.

Habit is one example of what may result from the association of ideas. Things that are habitually associated are usually remembered, and we should notice if they happen to be separated. An example of this is a teacup and a saucer. Habit is most important and helpful to us; habit allows us to do things automatically, as walking, knitting, bicycling, etc. Habit assists our memory; we learn to do things in a certain order, such as dressing. The insane frequently develop bad habits, such as picking the face, aimlessly tearing or destroying things, etc.; or, in another type of insanity, the patient may contract habits of thought regarding self, such as 'unworthiness' or 'grandeur.'

Memory.—Memory is a large subject, and it would be impossible to describe it in the small space that can here be allotted to it; but the nurse must try and understand some of the principles of it, as disorder of memory plays a very important part in mental disease. When any sight is seen, sound heard, etc., the impression it makes on the brain lasts for a short or long time, and the impression so made may arise again in consciousness as an idea. Now, the memory of a thing is not always the exact reproduction of the sensation or perception which originally occasioned it; for instance, one

person remembers more what he sees, another more what he hears. It is this fact which to a large extent accounts for the varied accounts different persons will give of the same event. *Recognition* is a form of memory, and it takes place in the following way: We meet a person, and as we look at him ideas associated with him arise in consciousness. We begin to recollect where we have seen him before and other facts concerning him, and it is these associated ideas clustering around that give us a feeling of familiarity, which finally determines the full recognition of who he is and all about him. We recognize objects in the same way, but if there are no associated ideas clustering around the object we have a feeling of strangeness, and we say we do not know what it is. For example, the reader may come out of an underground railway station in which he has never been before; he looks around, and fails to recognize the buildings, etc., and for the moment he does not know where he is; he is suffering from what is spoken of as *disorientation* (see p. 234). Imagine yourself always in this state, and you will appreciate what it would be like to suffer from this form of loss of memory: for although in your case the failure to recognize your whereabouts is the result of the newness of the surroundings, this feeling of strangeness is exactly the same as it is in the case of the man who fails to remember owing to loss of memory by disease, for he has the same absence of associated ideas to assist him in recognizing his position.

The marks of a good memory are: (1) The rapidity with which the power of recalling is acquired; (2) the length of time during which the power of recalling lasts without being repeated; (3) the rapidity and accuracy of actual revival; (4) the power of forgetting those things which are of no value or have ceased to be of value. To cultivate a good memory, it is necessary to have (1) a keen observation; (2) a power of concentrating attention; (3) a method of arranging in a systematic way things to be remembered; (4) a power of forming association.

For practical purposes we may divide memory into two classes: (1) recent; (2) remote. Later on, when the reader considers disorders of memory, he will observe that the real test of loss of memory is whether the 'recent' memory is good, as it is this form of memory that suffers first; and the patient suffering from it will be found no longer to be able to store fresh impressions, although he still may be able to recount incidents of his childhood.

Imagination is closely allied to memory, and yet it differs from it in several important particulars. A memory is more or less a recall of something we have seen before, whereas imagination is usually derived from a number of former things which we have seen, heard, etc.; that is, we rearrange in our minds the *ideas* (p. 207) of a number of things which we have seen, heard, etc., and form something which is apparently new. Now, when we were speaking of memory, we learnt that memory brings with it a feeling of familiarity that we have experienced before; but this is not the case with imagination, for although the parts composing the object are memory ideas, they do not strike us as familiar, owing to their rearrangement.

Movement and Action.—Movements are of two kinds: (1) *Voluntary;* (2) *involuntary.* With the former we have a conscious knowledge of how to perform the movements, and also recognize the movement whilst it is taking place. This is not the case with involuntary movements, such as those which take place in the heart, lungs, etc. Again, as regards action, we have to recognize certain forms. There is the *voluntary act,* which takes place during active attention, the person being actively conscious throughout what he is doing; for example, writing a letter. There is the *impulsive act,* which takes place during passive attention; for example, striking out when annoyed. And, finally, there is *automatic action* (see p. 187), such as walking, skating, etc., where acts which were originally consciously formed have become automatic through constant repetition. But, in disease, acts which for

years have been automatic may again return into the conscious state, and it may only be possible to perform them during active attention.

Impulsive acts are very common in mental disorder, and they will again be referred to as a symptom of insanity.

Judgment and Reasoning.—Judgment has been defined as 'the most elementary form of intellect,' and reasoning is the power of associating various judgments; *i.e.*, when we are given certain facts, and are in health, we should be able to weigh these facts and the importance of them, and give our conclusions regarding them. When dealing with insanity, the reader will observe that the insane person is unable to reason soundly on account of several circumstances—amongst others, because he is unable to attend to the matter in hand; or he may distort the facts by laying undue stress on one point, which for the moment seems to usurp his whole attention. Judgment and reasoning are too complicated for description in a book of this kind, and all that the nurse requires to grasp is that, to be capable of sound reasoning, the person must be observant, attentive, free from strong emotions, and possessed of a good memory. If any of these are defective, his ability to reason will suffer.

Will is a difficult subject to describe in a text-book of this nature, as for its proper understanding advanced knowledge of the mind and its attributes is required. Broadly speaking, when we are able to deliberate—*i.e.*, during active attention—on any suggestions as to conduct, and, after weighing these suggestions, to decide on any special course of action, we speak of this process as 'free will,' or choice.

Owing to the difficulty of simple description, this brief account of mind is of necessity very fragmentary, and what has been written must rather be looked upon as a bare outline of the subject. The reader must turn to the lectures which he will receive for a more complete and thorough understanding of it.

SECTION III

CHAPTER I

GENERAL REMARKS ON INSANITY

It has already been stated that the nervous system has two functions—the nervous and the mental. All parts of the nervous system perform nervous functions, but, so far as at present known, it is only a part of that system which has mental functions. This part is the cerebrum, or great brain, and it is in its surface grey matter, the cortex, that the processes occur on which mental activity depends. All the motor and sensory nerves in the body are connected with the cortex of the brain. It is in this way that the mind is able to become conscious of the various bodily sensations and to control movements. If this is so with regard to the ordinary healthy functions of mind, it is equally true of its extraordinary functions which are symptoms of insanity or unsoundness of mind. A sound mind requires a sound brain; an unsound mind means a diseased or disordered brain.

Attention may here be directed to certain views of insanity which have been, and by some people still are, held. By the ancient Hebrews, as well as by the Greeks and others, insanity was regarded as due to possession by evil spirits. No doubt this idea was suggested by many of the symptoms which insane people present. It is seldom that the ordinary character and habits persist during an attack of insanity, and everyone who has come much in contact with the insane must have

frequently been struck by the fact that persons of good character, who have led upright and honest lives, may, when attacked by insanity, become drunken, steal, use foul language, and behave generally in a way totally different from their normal selves. They are, as it is said, beside themselves. They seem unable to govern their own actions, and it is easy to see how the idea arose that some outside influence was responsible for these strange doings. The distressing symptoms of the epileptic, whether during the fit or after it, when, as is well known, acts of unnatural violence may be done, no doubt assisted in establishing the idea that these occurrences were the result of spirit possession. But wherever knowledge of the physiology and anatomy of the human nervous system exists, such an idea has been effectually rooted out, and wherever this mistaken notion still prevails, we may be sure that it is based on ignorance.

DEFINITIONS OF INSANITY.

A simple definition of insanity cannot be given. There are several reasons for this. One is that we do not yet fully know upon what changes in the brain insanity depends. The brain is the most complex organ in the body, and the examination even of its healthy structure is a matter of great difficulty, while the changes which disease produces in it are of still greater difficulty of recognition.

Another reason is that the symptoms of insanity are almost as varied as the individuals in which it occurs. The symptoms of inflammation of the lung or of the kidney do not vary to any very great extent in different individuals. Consequently their recognition is not usually a matter of great difficulty, and their definition is correspondingly easy. It is far otherwise with insanity.

A third reason is the outcome of those already mentioned. It lies in the fact that it is exceedingly difficult in practice to draw a hard-and-fast line between the mentally sound and

the mentally unsound. If a large number of men were taken, and each measured carefully to ascertain his height, they could then be arranged in a series beginning with the tallest and ending with the shortest. Many would be tall and many would be short, but it would not be easy to draw a sharp line and say that all on one side of it were tall, and all on the other were short. If this is so with regard to such a simple matter as height, it will be readily seen that it is a much more difficult thing to draw a similar line when a number of people are arranged in a series according to the results of an examination of their mental faculties. These mental faculties are numerous, and are, besides, developed to different degrees in different persons, all of them mentally sound. Even in the mentally unsound, there are usually some of their mental faculties which are in a normal condition. This is the reason why, as a matter of fact, no sharp line can be drawn separating the sane from the insane. A definition of insanity means the drawing of such a line. There is, in fact, no line, but a broad zone or region, which includes many people who in one respect are sane, but in another are insane.

The above illustration serves to explain the existence of what are known as borderland cases of insanity. The name applied to them explains their nature. Examples of such cases are seen in persons who are slightly eccentric, who are a little more than usually concerned about their bodily functions, or, as it is called, hypochondriacal; in those who are hysterical; in those who have slightly damaged their brains by excessive drinking, or who show deficient self-control in their indulgence in it; or, again, in those whose sense of right and wrong is not quite so acute as it is in most people. In cases such as these there would be some difficulty in placing them in the class of the definitely sane or the definitely insane.

From all the above considerations, it is not to be wondered at that the making of a definition of insanity is a very difficult task, and that few have attempted it. Maudsley has defined it as follows:

'Insanity is such derangement of the leading functions of thought, feeling, or will, together or separately, as disables the person from thinking the thoughts, feeling the feelings, and doing the duties, of the social body in, for, and by which he lives.'

This definition is better than most, but attempts to improve it would probably only lead to confusion, and so had better not be made.

There are certain other terms besides *insanity* in common use to express the same idea. One of the commonest is *lunacy*. This is a very old word, and is based on the idea that changes in mental state occur in sympathy with the changes of the moon (*luna*). This idea is not now accepted.

Alienation means being estranged from the normal or sane state of mind. The same idea is expressed when a person is spoken of as being strange in his mind. *Psychosis* is a term occasionally used to denote mental disease, and is derived from a Greek word signifying the soul or mind, and is used to indicate states in which the mind is affected. *Amentia* literally means absence of mind. *Dementia* is somewhat similar, but, strictly speaking, is applied only to a loss of mind which has been present, but has been lost through disease.

The subjoined definition of terms in common use for indicating divisions into which mental incapacity is grouped for administrative and other uses is adapted from the Report of the Select Committee on the Care and Treatment of the Feeble-minded (1908):

1. *Persons of unsound mind* are persons who require care and control owing to disorder of the mind, and are consequently incapable of managing themselves or their affairs.

2. *Persons mentally infirm* are persons who, through mental infirmity arising from age or from the decay of their faculties, are incapable of managing themselves or their affairs.

3. *Idiots* are persons so deeply defective in mind from birth or from an early age that they are unable to guard themselves

from eommon physieal dangers, such as, in the case of young children, would prevent their parents from leaving them alone.

4. *Imbeciles* are persons who are capable of guarding themselves against eommon physieal dangers, but who are ineapable of earning their own living by reason of mental defect existing from birth or from an early age.

5. *Feeble-minded persons* are those who may be capable of earning a living under favourable circumstanees, but are ineapable from mental defeet existing from birth or from an early age (*a*) of competing on equal terms with their normal fellows, or (*b*) of managing themselves and their affairs with ordinary prudence.

6. *Moral imbeciles* are persons who from an early age display some mental defeet coupled with strong, vicious, or eriminal propensities on whieh punishment has little or no deterrent effeet.

THE ESTIMATION OF THE MENTAL CONDITION.

There are three methods of aseertaining the mental eondition of any person. These are by examining the appearanee, the eonduet, and the eonversation. Much may be learned from how a person looks, and the expression of the face, the attitude, the dress, and other visible signs of a person's emotional and mental state, should be earefully observed. Conduet is also of great importanee. In some eases that alone is suffieient evidenee of the mental state. But in judging of eonduet it is important to remember that what may not appear to be at all unusual in a person's behaviour may, on inquiry as to what this formerly had been, really be so; that is to say, the present eonduet should, if possible, be compared with the previous, when the person was in an admittedly sane state. An individual naturally quiet and reserved may beeome talkative, friendly, and open with strangers, though not to sueh an extent as to be regarded as unnaturally so by

a person who did not know him before. Such conduct would, however, be very strong evidence of something being wrong to a person who knew him well. It is also very necessary to ascertain the cause of such conduct if it seems to be unnatural, as both the appearance and conduct may be quite justified when one learns the cause of them. The loss of a friend or the arrival of unexpected good news may explain in a quite natural way behaviour that would otherwise seem to be insane.

In nearly all cases, however, it is chiefly by what a person says that his mental state can best be judged. It has to be remembered that many persons really insane are very secretive when they suspect that they are being cross-questioned. They put off inconvenient questions, and do their best to conceal what they know other people regard as delusions, so that it sometimes requires skill and experience to ascertain really what a person's thoughts and beliefs are. In this connection it is important to be sure that what are stated to be delusions really are so, as it has sometimes happened that more careful inquiry shows them to be not delusions, but real facts. Sometimes a person refuses to speak at all, but this is not in itself a sign of insanity, as he may be deaf, or the refusal may be due to quite good reasons. A person may converse quite intelligently and sensibly, his memory may be quite good, and there may not be much to attract attention in his appearance or conduct, but all the time he may be so depressed as to meditate suicide. Sometimes evidence of the mental state can be obtained from letters when it cannot be got by conversation. Such evidence may be of great value.

Certain general influences, known as *environment*, greatly affect the question in judging of a person's mental soundness. The influence of race is very marked. Conduct which in an Englishman would be absurd and insane might in a Hottentot be quite reasonable and proper. The same applies in connection with education, religious training, manner of life, and past history. We are all indelibly influenced in our opinions and beliefs by what those around us think and believe, and therefore it is necessary, in judging of a person's mental state, to bear in mind what his environment or surroundings have been. As they vary, our judgment must vary with them. See also examination of patients (p. 259).

CHAPTER II

PHYSICAL ACCOMPANIMENTS OF MENTAL DISORDER.

Seeing that mental activity has its seat in the cortex of the brain, it may be generally stated that mental diseases are diseases of that portion of the brain. It must, however, be remembered that by no means all diseases of the brain cortex produce mental disorder, for in some cases considerable injury to the convolutions may occur without causing mental disturbance.

The causes of mental disorder are so numerous and complex that it is impossible to review them here; but it may be stated that, whenever a nervous system breaks down and acute insanity results, either the nervous organization was defective, or it has been subjected to stress of extraordinary severity. In the great majority of cases, however, insanity occurs in consequence of defective nervous organization. Just as it is impossible to find a person with so healthy and perfect a body that some slight deformity or degeneracy cannot be observed, so it is impossible to find a perfect mind. Many persons are insane because their brains are not equipped with a sufficient number of nerve cells or a proper complement of association nerve fibres; others start life with a normal supply, but either from disease or decay the nerve cells become reduced in number or activity.

Insanity may seem to depend on physical changes which at first sight seem to have nothing to do with the brain, but we must remember that almost every bodily disease has a mental aspect. The nervous disturbance caused by bodily disease may be so slight as to be merely represented by pain, irritability, or general feeling of illness, or it may be more pronounced, and give rise to definite mental symptoms. Given a defective nervous organization, or one feebly endowed with

enduring qualities, it is probable that any condition capable of reducing the general health may cause such profound mental disorder that insanity is produced.

In cases of nervous disorder or deficiency, there are necessarily physical changes; and as no development or growth can go on without healthy action of the nervous system, we find, as would naturally be expected, in individuals born with undeveloped brains or possessing brains whose development has become arrested in infancy, certain bodily abnormalities or deviations from the average type. These we speak of as *stigmata of degeneration.*

Stigmata of Degeneration.—The *head* may be of unusually large size (*hydrocephalus*) or unusually small (*microcephalus*); the forehead low, very sloping, or narrow; the occiput flat; the whole skull unusually long or broad; the two lateral halves of unequal size; at the root of the nose there may be a deep depression.

The *face* may be disproportionately large compared with the head; the lower jaw may be too large; the upper teeth may project in front of those of the under jaw, or *vice versa*. Both upper and lower jaws may protrude; the two sides of the face may be asymmetrical; hair may be present on the face in the case of the female degenerate, whereas in the male degenerate the customary hair may be absent. The eyes are sometimes not on the same level; or they may be of unusual size or of different colours.

In the *ears* many abnormalities are seen, the most obvious of which are inequality of size; they may be too large, sometimes they are very projecting, and frequently the lobe is under-developed, adherent, or even missing altogether.

The *teeth* are often misshapen and stumpy; there may be a double row of teeth or too great an interval between the individual teeth. They frequently project forward in a slanting direction. Occasionally two teeth are fused into one.

The *palate* may be too narrow, too high, too low, or too broad, too short or too long in an antero-posterior direction.

Asymmetry of the chest and limbs is often found combined with other abnormalities in development, such as rudimentary hands or feet, or an excessive number of fingers or toes.

In fact, anything in the configuration of the individual that constitutes a deviation from the normal or produces irregularities or asymmetries may be considered as a characteristic of degeneration.

It must be remembered, however, that, except in cases where such stigmata are particularly important—*e.g.*, microcephalus or hydrocephalus—we cannot speak of an individual as a degenerate unless he bears many degenerative signs.

Bodily Changes accompanying Insanity.—Just as bodily changes are common in cases of nervous under-development, so in cases of nervous disease and disorder there is generally to be found some disturbance of the bodily health.

Nutritional Changes take place in all the tissues of the body. One of the earliest symptoms of acute insanity is loss of weight, and this symptom frequently precedes the development of mental disturbances. Nutritional disorders also take place in the hair and nails, which may become brittle. The skin may be dry and harsh, and pustules and abscesses may develop. The bones may become liable to fracture. Lastly, many patients suffering from mental disease readily develop bed-sores.

Secretory Disorders.—The saliva is diminished in melancholia, and this, together with insufficient secretion of digestive juices, may partly account for the indigestion and loss of desire for food which is so often met with. In those cases in which there is a constant dribble from the corners of the mouth (salivation), there may be no increase in the amount of saliva secreted, but owing to diminished pharyngeal reflexes the saliva is not swallowed.

Digestive Troubles are extremely common, and in acute cases there may be serious indigestion. The tongue is furred, the breath very offensive from fermentation of food within the stomach. Vomiting of partly digested food occurs in severe cases.

Constipation is very commonly met with in all forms of acute mental disorder, and in melancholia it is an almost constant symptom.

The Urine is diminished in quantity in melancholia, but in hysteria and general paralysis an increased secretion is not uncommonly met with. In some forms of insanity there is deficient excretion of urea.

Heart and Circulation.—The pulse-rate is frequently increased, and this is especially common in acute mania and in the agitated forms of melancholia. In other mental disorders,

notably in stupor and the grosser forms of dementia, the circulation is sluggish, the pulse-rate is diminished in frequency, and the extremities are cold and blue.

The Blood.—A diminution in the number of red corpuscles, with a deficiency in hæmoglobin, is not uncommonly met with ; and in some cases of insanity a large increase in the number of white corpuscles is found.

The coats of the *bloodvessels* are atheromatous and diseased in a certain number of cases.

Respiratory System.—All we need say here is that, in many demented patients and in cases of stupor, the respirations are very shallow. This has an important bearing on the fact that not a few of such patients succumb to tuberculosis of the lungs.

Reproductive System.—In the majority of cases of acute insanity, menstruation is disordered, and in melancholia it is frequently absent. It must be remembered that cessation of the menses must be looked upon as a symptom in the course of insanity, and not as a cause of it.

In conclusion, it may be stated that the general physical aspect of the patient may be altered. Mental deterioration may leave the features so changed and debased that many chronic lunatics closely resemble confirmed criminals in their appearance.

MORBID CHANGES IN THE BRAIN OBSERVED AFTER DEATH.

We must now mention, as shortly as possible, the more obvious (morbid) appearances met with in the brains of insane patients after death. It will be convenient to classify these into four groups :

I. The brain may be poorly or imperfectly developed.
II. It may appear healthy.
III. It may be wasted or generally diseased.
IV. It may show signs of local destruction or disease—*e.g.*, hæmorrhages, softenings, tumours, etc.

In Group I. (imperfect development of brain) will fall almost all cases of idiocy and imbecility, The brain may be unusually small ; in other cases it may be very large, often from distension of the cerebral ventricles with fluid. The convolutions may be too small

in size and too few in number, and certain portions may be absent altogether.

Group II. (external appearance of brain healthy) includes most cases suffering from the *acute* forms of insanity, and those *chronic* cases in which we can find no evidence of dementia. Although, in these insanities, the brain may be to all intents and purposes normal in appearance, we are often able, with the aid of the microscope, to demonstrate more or less marked changes in the nerve cells. Thus, in cases of acute mania and melancholia which die during the course of the attack, from one-fourth to one-half of the cortical nerve cells may show distinct degeneration; and large numbers of nerve cells may have actually disappeared. Again, in cases of acute alcoholic insanity with marked 'confusion,' similar appearances are seen in the cortical nerve cells. It may be mentioned here that the brains of a few idiots and imbeciles may seem normal, as far as outward appearances go. We find, however, on microscopical examination, that the cortical nerve cells exhibit all grades of under-development.

Group III. (brain obviously wasted or generally diseased).—This group includes all cases of primary, secondary, and senile dementia, and also general paralysis. The wasting of the brain arises chiefly from a thinning of the cortex, and its amount corresponds, roughly, with the degree of dementia. Besides this thinning of the cortex, a few other changes may be mentioned. The *skull-cap* may be thickened or, less frequently, thinned. The *dura mater* may be adherent to the skull-cap, and on its inner surface there may be hæmorrhages. This especially occurs in general paralysis. The *pia-arachnoid* is thickened and white, and in general paralysis it may be adherent to the brain. The cerebro-spinal fluid is in excess of the normal, its quantity varying directly with the amount of brain-wasting.

Group IV. (brain exhibits signs of local destruction or disease).—In this group we find all those cases in which the mental disturbance is due to some local disease of the brain. Such local diseases consist chiefly of hæmorrhages, tumours, softenings, and abscesses. The situation of the local disease is of great importance; for example, quite a small focus in the region named 'auditory memories' (see diagram p. 200) may give rise to marked dementia, whereas comparatively large destructive foci may occur in other parts of the cortex, and cause but a few trifling symptoms.

We will now draw this chapter to a close by mentioning, as briefly as possible, the changes revealed by the microscope in the brains of patients dying insane. These changes may be divided into those which affect (*a*) the neurones, (*b*) the bloodvessels, (*c*) the neuroglia.

(*a*) *The Neurones.*—It will be remembered that the neurone is the special cell element of the nervous system, and that a neurone consists of a nerve cell, containing a nucleus, and several branches (dendrites). As occurs in other tissues of the body, the neurones may themselves become primarily diseased, or they may become secondarily affected either from failure of their supply of nutriment

(owing to disease or blockage of the bloodvessels), or from poisons of various kinds circulating in the blood and cerebro-spinal fluid.

The changes in the *nerve cells*, in whatever way caused, may be acute, subacute, or chronic; in other words, they may develop rapidly or slowly.

When the process is an *acute* one, as in acute insanity, there first occurs a breaking-down (disintegration) and disappearance (dissolution) of the material stored up in, and used by, the nerve cell in the performance of its functions. This material is shown as small black bodies in the diagram on p. 172. The next step in the destruction of the nerve cell is disintegration of its actually living substance; and when this occurs, the nucleus, instead of occupying the centre

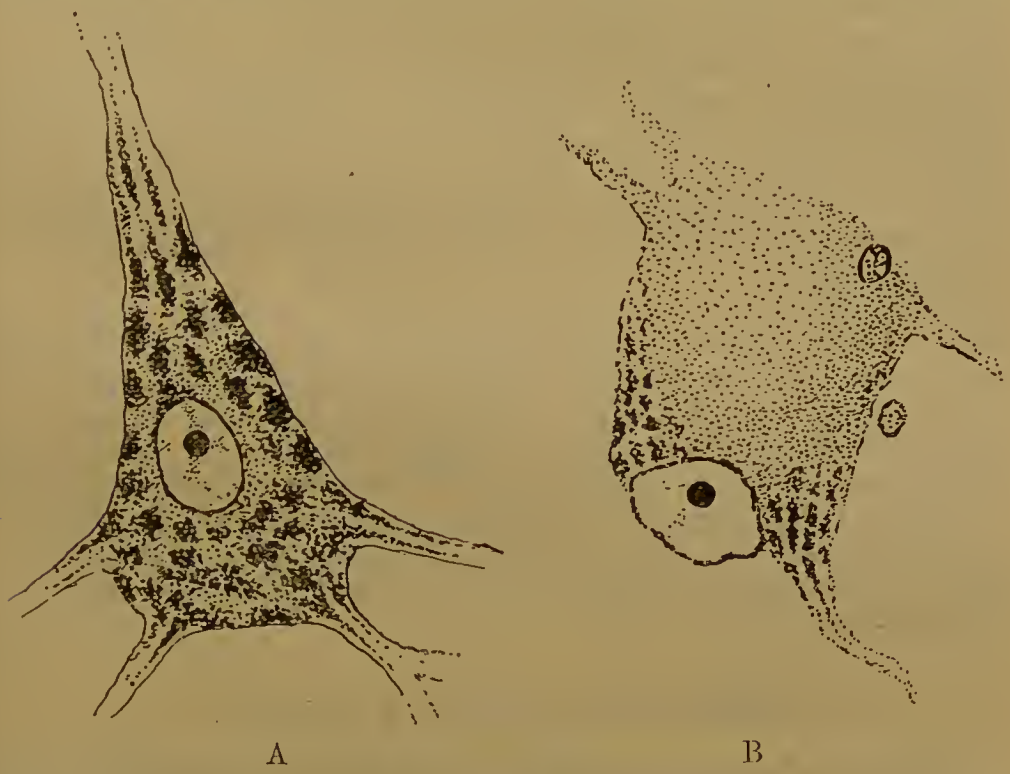


FIG. 19.—DIAGRAM OF NERVE CELL IN HEALTH (A) AND IN DISEASE (B).

of the cell, becomes displaced to one side (see illustration). If this breaking down of the actual living substance of the cell takes place to any great extent, no recovery of the function of the cell can take place. The cell is dead, and ultimately it will be absorbed and removed.

When the disease affecting the nerve cell is *chronic*, changes similar to those above described take place; but they occur much more gradually. The cell slowly atrophies and becomes shrunken, and its structure is more or less replaced by fatty or pigmented material.

In association with degeneration of the nerve cells, we find corresponding changes in the *processes* of the nerve cells, including those

which form the nerve fibres (axones). In certain diseases of the brain and of the nervous system generally, the nerve fibres may perhaps be primarily affected, and whole tracts of them destroyed, without any very obvious change being observable in the nerve cells from which these particular nerve fibres arise. When this destruction of nerve fibres has occurred (whether primarily or secondarily), the normal connections or communications between a group or groups of nerve cells and others cannot take place; and interference with the functional 'association' between one part of the nervous system and another therefore ensues.

(*b*) *The Bloodvessels.*—These are frequently diseased. The walls of the arteries may become thickened by deposits of fibrous or chalky material in their walls, and often the lumen of the vessels may become lessened, with the result that there is a diminution in the supply of nutriment to the neurones. Actual obstruction of the blood-flow in the arteries and veins may also take place, either by clotting of blood in the vessels themselves (thrombosis), or by the lodgment in them of a clot which has been formed in some other part of the body (embolism). When this occurs, large numbers of the neurones may be rapidly destroyed unless the circulation is soon re-established.

(*c*) *The Neuroglia.*—The cells forming the supporting or binding tissue of the nervous system, known as the neuroglia, become greatly increased in number during the process of destruction of the neurones, and also after these have disappeared. They may ultimately replace the neurones to a large extent, as a form of scar. This increase of the neuroglia occurs very rapidly and very markedly in some acute affections—*e.g.*, in certain cases of general paralysis; but more slowly, and to a less degree, in other forms of disintegration of the nervous system — *e.g.*, in that associated with the dementia of old age.

RESULTS OF ACUTE INSANITY.

Recovery.—In exhaustion there is normally a dissolution of the materials stored in the nerve cell. During rest these are restored by the assimilation of nutriment from the lymph in which the cell is bathed, and the cell is again functionally active. In disease this process is greatly exaggerated. If, however, the morbid process goes no further than this, new material may be built up into the cell, and its function entirely restored. In this way there may be complete recovery from the changes in the cortex occurring in acute insanity.

Dementia.—When, however, recovery from acute insanity is only partial, a large number of the neurones have been actually destroyed, and permanent dementia, of a greater or lesser degree, results. In certain instances of progressive dementia, the destruction of nerve cells may be very great; and although the increase in neuroglia to some extent replaces these destroyed cells, subsequent contraction

of this newly formed tissue occurs, and the brain becomes shrunken and wasted. This wasting of the brain occurs especially in particular areas, notably in the frontal region (see pp. 202 and 203). In long-standing cases the degree of dementia exhibited by the patient is proportionate to the amount of wasting of the cortex of the brain.

CHAPTER III

THE MENTAL SYMPTOMS OF INSANITY.

In studying the symptoms of insanity, it will be convenient to describe the varying mental disturbances under three heads: (1) Disorders of the emotions; (2) Disorders of the intellect; (3) Disorders of volition. In following the time-honoured subdivisions of mental activity, 'feeling,' 'knowing,' 'willing,' it must be understood that in the great majority of cases such an analysis of symptoms is artificial. For instance, in a common form of mental disorder, to be described later, mania, emotional disturbance is seen in the marked exaltation; the rapid flow of ideas and defective judgment indicate disorder of the intellect; that the will also is affected is manifest by the restlessness and uncontrolled behaviour.

In the following description the symptoms of mental disorder are discussed as if they were distinct from each other, but in practice this is not the case. They are found associated in various ways, and we rarely, if ever, find a patient with but a single manifestation of insanity.

DISORDERS OF THE EMOTIONS.

Emotional disturbance is very frequently met with in insanity. Sometimes it appears to be the chief symptom, and may so dominate the case that the intellectual disorder accompanying it may be obscured.

Any of the emotions may be affected, and the departure from the normal may be in the direction of increased or decreased intensity or perversion.

A. The following are some of the common disorders of the emotions characterized by **an Increase of Intensity** :

(*a*) **Mental Depression.**—A person is said to be depressed when he is sad or unhappy without any sufficient reason.

The depression may be slight, and akin to the unexplained feeling of being ill at ease or sad that we all experience at times. We are held 'captives in the dark chambers of dejection,' and know not why. In all probability, some change of climate or slight irregularity in the digestive function, or possibly a partial failure to remove waste products, is the true explanation.

Even when no cause can be traced, there is little reason to doubt that such depression arises from purely physical changes of a passing nature, too slight, perhaps, to give rise to any feeling of discomfort.

From this state, which can hardly be considered a departure from good health of body and mind, there is to be found every stage of depression until the deepest melancholy is reached. In a severe case of melancholia the patient is in a state of abject misery, and the mental pain and distress are constant. In cases such as these delusions usually develop. (See also 'States of Depression,' p. 260).

(*b*) **Exaltation.** — The opposite state, exaltation, often follows or precedes or alternates with mental depression. At other times it arises quite independently. It also is generally associated with intellectual disturbance.

In exaltation the natural sense of well-being is increased. The patient is unduly happy and cheerful; everything is bright, and the world is rose-coloured. Difficulties vanish, and in extreme cases the slightest thing gives great pleasure, and the patient will say he was never so happy in his life. In some cases there is an increased feeling of 'fitness' and a greatly exaggerated opinion of the mental powers. Delusions of grandeur are a natural development of this mental condition. (See also 'States of Excitement,' p. 263).

(*c*) **States of Anxiety.**—Associated with depression is some-

times found a state of anxiety and fear that something dreadful will happen. This may be a nameless dread of some unknown horror; in other cases there is a definite presentiment of evil. (See p. 241.)

(*d*) **Excessive Affection** is also sometimes seen in the insane, and requires no special description.

B. **Decreased Intensity of Emotion.**—In mental enfeeblement all the faculties may be dulled, the patient becoming less responsive to surroundings, and the capacity for experiencing pleasure, pain, love, and hate, may be greatly reduced.

Emotional indifference is an early sign in many cases of dementia occurring in adolescent patients. Fully conscious of all that goes on, such patients, nevertheless, lose their interest in events, do not care what happens, and pay little heed to the anxieties of those near and dear to them.

Loss of natural affection is one of the commonest symptoms in insanity, and occurs both in acute and in chronic cases. This is one of the saddest features of mental affliction. The mother's tender care ceases; filial affection is lost; the husband forgets his wife; the young man, his heart's desire.

C. **Perversions of the Emotions** not uncommonly occur amongst the insane.

Extraordinary friendships are sometimes seen in asylum patients, and also unreasonable and passionate jealousy and hate. In other cases there are morbid, strange longings, or an extreme craving for sympathy.

The natural sense of well-being may be perverted, and patients say that their feelings have all changed, or that they have no natural feelings.

Disorders of the Organic Desires and Appetites.—It will not be necessary to describe the perversions and alterations of the organic appetites which are common symptoms of insanity. Some of these, such as the loss of the desire to live and refusal of food, are mentioned under disorders of volition.

It will be sufficient to say perversions of the sexual instinct

may lead to unnatural and indecent practices, whilst in respect to food the natural instincts are so perverted that all kinds of dirt and garbage may be eaten by certain patients.

DISORDERS OF THE INTELLECT.

A. **Disorders of Perception.**—*Alterations in acuteness of perception* are common in both the sane and insane. Some persons are extremely sensitive to external sounds, and an ordinary footfall may be intolerable, or the light of day may be so distressing that dark corners are greatly preferred. This may occur without any disease of either the ear or the eye. Patients convalescent after long illness are frequently over-sensitive, and their irritability may arise from this. On the other hand, the insane are frequently greatly deficient in sense perception, notwithstanding the absence of any disorder affecting the peripheral nerves. Patients may burn themselves deliberately and appear to feel no pain. In stuporous states the powers of perception seem largely in abeyance, although it is true that many patients in a state of stupor are subsequently found not to have been so unobservant as they appeared to be. In extreme cases of dementia, the perceptions, together with all the mental faculties, are greatly dulled, and external circumstances produce little impression.

Illusions arise from the misinterpretation of sensations, and are common in both the sane and insane. A rumbling sound may be heard, and thought to be due to thunder, whereas it is the sound of blasting; an intensely cold piece of metal may feel as if it is burning the hand. Illusions are quickly dispelled in normal conditions by investigation. Thus, when in doubt whether the train in which we are, or another seen through a carriage window, is in motion, we instinctively look out on the other side. Or, if doubtful whether a dark shadow in the room is or is not a black cat, we move our position or correct our first impression by putting out a hand.

It is evident that an illusion is a false perception arising from something external which really exists, but which is misinterpreted. When occurring in the sane, the reasoning powers correct the false impression.

In the insane, illusions are frequently not dispelled in this way, and the nature of external things is often entirely mistaken. The pattern of the wall-paper may become faces staring at the patient, the flies on the bed-quilt may appear to be vermin, and the howling of the wind become the crying of a forsaken child.

Under this heading must be placed the misinterpretation of sensations arising in one or other organs of the body. Thus, an attack of indigestion may be mistaken for pain due to other causes, giving rise to the delusion that rats are gnawing at the vitals or that the inwards are being twisted. It is probable that many delusions relating to the internal organs are dependent upon illusions in this way.

Similarly feelings of extreme lightness or weight of a limb may arise from disorders of the muscular sense.

Hallucinations.—If a person says he hears a voice when, as a matter of fact, there is no one speaking, he is said to have an hallucination of hearing. If he sees a vision at night in utter darkness, he has an hallucination of sight. An hallucination is a perception without an object. It is subjective, and arises independently of external objects. In other words, we may define an hallucination as a perception, affecting the special senses, arising without any external cause.

Hallucinations are important symptoms of insanity. They greatly influence the beliefs and the behaviour of patients. In certain cases the whole conduct is dependent upon dictation by 'voices,' and dangerous acts of violence may occur in consequence.

Hallucinations may affect any of the special senses.

Hallucinations of **hearing**, or auditory hallucinations, are the most common, and they occur in great variety. Sounds and noises of all kinds may be heard, or inarticulate whisper-

ings, or definite voices. In the case of voices, the patient can sometimes recognize the voice as that of someone previously known. The nurse, silently sitting in the room, may be accused of making some disparaging remark, or persons absent or deceased may be thought to have conversed with the patient. In some cases the voices are loud and imperative, and the patient feels impelled to do as they direct.

Hallucinations of **sight**, or visual hallucinations, also frequently occur in the insane. They may be merely flashes of light, or definite images of persons and things may be presented to the mind—*e.g.*, rats, vermin, insects, and horrible creatures—or phantasms, such as visions of angels or apparitions of departed friends.

Hallucinations of **common sensation** also occur — strange feelings of crawling, burning, or tingling, or of someone touching the skin, or a feeling of pressure upon the throat, as if being strangled.

Hallucinations of **smell and taste**, or olfactory and gustatory hallucinations, are usually associated together, and occur when patients believe there are offensive odours about them, or that their food is bad, or that foreign and hurtful substances can be tasted in it.

Hallucinations are very rare in persons of sound mind when in the waking state. Some well-known historical personages are said to have experienced them—*e.g.*, Joan of Arc, Martin Luther, George Fox, Goethe—and cases have been recorded of persons being able to produce hallucinations at will. Hallucinations also occur in some persons when fatigued. They can be produced temporarily by certain drugs, such as Indian hemp and chloroform, but in these cases the sensations experienced are associated with partial unconsciousness. When dreaming or on the point of waking from sleep, hallucinations are common, and in no sense abnormal.

In the insane, hallucinations are usually in harmony with the beliefs and emotional state of the patient, and must be looked

upon as a development of these. Thus, a woman in a state of terrible depression may hear a voice telling her she is an outcast, and will be sent to prison; later the voices will accuse her of crimes.

It is not rare for false perceptions to affect more than one sense simultaneously. Thus, the same patient may hear voices denouncing him, see horrible faces, feel the crawling of vermin, and complain of horrible smells in the room. Sometimes, as in cases of delirium, the hallucinations are variable and fleeting, and they may be either pleasurable or painful in character. As a general rule, patients do not experience hallucinations when intently occupied, but much more commonly at night or when alone. In some cases the whole attention is taken up with listening to and answering the voices to the exclusion of all other matters.

In the insane, hallucinations are accepted as real experiences with little or no hesitation. The evidence of the senses, fitting in as it usually does with existing ideas, is not questioned, and a false interpretation follows. In this way delusion may arise. It is not, however, possible to separate the hallucination from the beliefs arising in connection with it. In the great majority of cases the patient is unable to correct the false sense perception; it becomes at once a false belief. Thus, a patient who hears voices abusing him believes that persons outside are the cause of this; the man who sees the face of a friend believes his friend has visited him; the patient who feels a crawling sensation in the skin believes he is verminous; and badly-smelling food is believed to have been poisoned.

Evidence of Hallucination.—As a rule, a patient suffering from hallucinations reveals their existence distinctly by his actions, statements, or complaints. But sometimes there may be great difficulty in ascertaining their presence. This is chiefly true of auditory hallucinations, and a patient may not only refrain from mentioning them, but may avoid the subject and take pains to guard against other people discovering that

he is subject to them. This may be done because the patient is aware they are considered a symptom of insanity; at other times they are concealed because the 'voices' deal with their most secret and private affairs. In the great majority of cases an observant attendant will see such a patient turn his head sharply, as if to catch a word, or smile to himself, or frown in a way that cannot be explained by ordinary circumstances, or he may notice that the patient's whole attitude is one of rapt attention. Talking to oneself is no evidence of hallucinations of hearing; many sane people do this when in deep thought. But if the speaking be of the nature of a conversation, such as may be heard when a person is speaking through a telephone—pauses followed by replies addressed to some person not present—it is almost certain that the patient is subject to hallucinations.

It is usually an unfavourable sign if hallucinations persist without change for more than five or six months, as it often means that the patient will not recover. The appearance of definite hallucinations in young persons apparently in good health is also generally considered a grave sign. In the chronic forms of insanity, the hallucinations most frequently found are those of hearing, and in every asylum there are cases in which these are the most striking symptom.

Hallucinations of sight are frequently experienced by epileptics, and sometimes before a fit the same hallucination is repeated, so that it warns a patient that a fit is impending.

Occasionally hallucinations are apparently connected with some local disease of the organ of the affected sense; *e.g.*, hallucinations of hearing are frequently associated with deafness. Sometimes patients with disease of one ear may have hallucinations on the affected side only. This, however, is rare, and in the majority of cases there is no disease in the sense organs or in any part of the nervous system outside the brain.

B. **Disorders of Memory.**—Defective memory is a common failing. We are all worried at times because we cannot

remember something important or have forgotten an appointment. In some cases of mental disorder the failure of memory is extreme, and occasionally it is the leading feature of the disease.

Loss of memory is termed 'amnesia,' and it may be temporary or progressive.

Temporary loss of memory is common after injury, and it may frequently happen that a person meeting with an accident cannot recollect afterwards a number of incidents that happened prior to the accident. In epilepsy, patients are entirely unconscious during the fit, and remember nothing of what has happened, and in those cases where patients perform automatic acts there is generally no memory of what has been done. Thus, such a patient may suddenly attack, and even murder, a bystander, and have not the slightest recollection of having done so. In many forms of acute insanity, patients do not remember what has taken place, and often the impressions received during days, and even weeks, are entirely blotted out. This is most marked in delirious cases and in patients who are confused. It not uncommonly happens that one or two incidents only are remembered in the course of a long illness, and sometimes these memory impressions may be so imperfect that they give rise to false accusations.

Also in many alcoholic patients there is serious impairment of memory (see p. 292).

Progressive loss of memory occurs in a number of conditions, such as general paralysis and senile decay.

The loss of memory of recent events is a common sign of advancing years, and in some cases it becomes so extreme that the patient cannot remember where he is or the names of those daily in attendance. (See 'Insanity from Old Age.')

Distorted Memory.—In some cases of defective memory, on being asked questions, the patient fills up the gaps in his recollection with entirely fictitious statements. It is most commonly found in certain cases of alcoholic insanity.

Dr. Mercier relates the following case: 'A patient suffering from dementia due to alcohol had a struggle in a carriage, in the course of which his finger was dislocated. A few days afterwards, on being asked how the injury occurred, he gave a detailed account of tripping on a loose stair-carpet and falling forwards,' etc. Erroneous reminiscence such as this is common in insanity and in other allied states, and it is the basis of many accusations of ill-treatment that are made.

Epileptic patients in like manner sometimes make entirely false accusations against those who have attended them in a fit. The nurse must understand that such patients are not necessarily lying, in that they may have no intention to deceive, and may not be even prevaricating, but that the false statements may arise from a distorted or disordered memory of what has happened. Considerable injustice may be done to patients in thought, if not in deed, through a hasty conclusion that statements of the kind indicated are malicious and intended to cause trouble.

Inability to Recognize Surroundings (*Disorientation*).—In some cases of mental disorder the patient is unable to recognize his surroundings. He is mistaken entirely as to his locality, and may say he is in another town. Moreover, the persons about him are apt to be mistaken for those he has previously known, and he may make serious mistakes in identifying anyone he meets. Disorientation is the name given to this condition. Strictly speaking, the word 'orientation' means 'finding the east,' and we speak of the orientation of a church; but it has come to mean in addition an inability to locate oneself correctly.

The term 'disorientation' is often used in a somewhat wider sense, and includes (1) a failure to locate oneself in space; (2) inability to measure correctly intervals of time; and (3) a failure to know one's own identity. Disorientation, clouding of consciousness, and loss of memory, are often associated. This occurs in many cases of delirium, in confusion, and in post-epileptic and alcoholic states.

C. **Disorders of Consciousness.**—**Loss of consciousness** occurs in dreamless sleep, and also in a number of diseased

states, such as syncope, coma, concussion, and apoplectic seizures; also in many forms of poisoning, whether introduced from without, as in the case of morphia and many other drugs, or developed within the body, as in diabetes or kidney disease. During an epileptic fit the patient is completely unconscious.

Impairment of consciousness occurs in many forms of mental disorder. Thus, in delirious and confused states the consciousness is clouded. So also in some cases of dementia and in advanced general paralysis and extreme senile decay the patient may be only partly conscious and have a very imperfect knowledge of what occurs.

D. **Disorders of Attention.**—The power of attention may be affected in two different ways in persons suffering from mental disease. The attention may wander so that the patient is unable to listen to what is said, or continue any consecutive employment for more than a very short space of time, being distracted by each movement or sound near him. This often occurs in maniacal excitement. In this condition it may be easy to gain the attention for a moment or two, but almost at once it is lost; another subject is before the mind, to be in turn unheeded after a short interval.

We get the opposite of this condition when a patient's thoughts are concentrated upon some fixed idea, and he cannot be roused to take an interest in any other subject. This is common in melancholia. Some painful thought claims the whole attention, and the patient is wrapped up in his own unhappiness, and indifferent to almost everything that goes on around.

E. **Disorders of the Power of Consecutive Thought.**—In health people vary greatly in the manner in which they think. Some think rapidly, others slowly and deliberately. In some the train of thought may be clear and orderly; in others it is confused and disordered. In the insane these differences are much exaggerated. The power of associating ideas may also be disturbed, and the disturbances are closely allied to those of attention already referred to.

The rapidity of the association is apparently increased in maniacal states. Ideas flow quickly, and the patient will speak with unwonted rapidity; there is a wealth of ideas crowding into the mind. One subject suggests another, but generally the train of thought has no definite end in view. This has been spoken of as 'the flight of ideas.' The flow of words continues undirected and unchecked, as if the thinking machine were running away.

On the contrary, in many cases of depression the association of ideas is *very much slower* than is normal. To the simplest question no answer is given, but possibly after a long interval a disjointed word or two will indicate an attempt at reply. In such cases there is often a wish to reply, but the train of thought moves so slowly and with such difficulty that no answer is given. The failure to reply to a simple question may, however, arise from other causes—*e.g.*, indifference and inattention, inability to understand, and confused and disordered thought.

When a patient's ideas appear to have no connection one with another, we say they are incoherent, and when he gives expression to jumbled and disconnected sentences or phrases we say there is **incoherence** of speech. It must, however, be noted that from the patient's point of view there may be much more connection than appears to the bystander. Sometimes patients suddenly recover, and on inquiry it is found that the train of thought is much more reasonable than appeared to be the case at the time of observation.

In other cases the association of ideas and the process of thought generally seem muddled, and no orderly sequence in the train of ideas can be made out. This is called **confusion**, and will be referred to later under 'States of Confusion' (p. 269).

The term **delirium** is used when a patient is confused, incoherent, and unable to attend to what goes on around him. This is accompanied by extreme mental activity. Such patients usually suffer from fleeting hallucinations and

delusions of all kinds; there is also profound emotional disturbance. It will be seen that the term 'delirium' is used for extreme disintegration of mind; the whole thinking apparatus is disordered. The machinery is working, it runs with great rapidity, but the various parts are no longer working in harmony, and disorder reigns. (See also 'States of Delirium,' p. 267.)

F. **Disorders affecting the Judgment and the Reasoning Faculty.**—The power of understanding the consequences of actions is impaired in many forms of insanity. In choosing between alternatives, the insane person does not exhibit the same good sense as formerly, and in arranging his business affairs or planning out his time the pros and cons are not weighed as carefully as they were. In short, the **judgment is impaired.**

It may be mentioned that in the early stages of *alcoholic intoxication* the effect upon the judgment is marked. A temporary loss of self-control is produced, and the subject becomes emotional, indiscreet, and irritable. His speech and actions tend to be uncontrolled; he is careless and irresponsible. This common condition illustrates a very similar alteration in judgment found in simple maniacal states and in the early stages of general paralysis. In these it is not so much want of knowledge, or a failure to perceive and understand, as a lack of wisdom and good sense. The patient does things which formerly he would never have thought of doing for a moment, and his conversation and conduct alike exhibit impairment of judgment.

The faculty of reasoning correctly and drawing sound conclusions is frequently impaired in many forms of insanity, especially in all forms of dementia. And in all states of delusion there is a perversion of judgment and disorder of the reasoning faculty.

DELUSIONS.

If a person has a fixed belief in something which is obviously contrary to reason, he is said to labour under a delusion. For instance, if a man is convinced that he is the 'King of the Universe' or that he has no liver, it is clear that these beliefs are erroneous, and we therefore call them delusions.

Some persons make a distinction between 'delusions' and 'insane delusions'—the former being false beliefs compatible with sanity,

the latter corresponding with delusions as defined in the text. When the word 'delusion' is used by medical men, insane delusions are almost invariably meant, and the use of the word 'insane' appears superfluous.

But every erroneous belief is not a delusion. We are all liable to make mistakes, and because we may hold opinions which in reality are incorrect we are not necessarily deluded. It may be that from imperfect knowledge or loose reasoning we have come to a wrong conclusion. In health, however, such mistaken beliefs can be corrected by explanation or further investigation.

Even if uncorrected, every false belief is not necessarily insane in character, for it may follow naturally or reasonably from the education and surroundings of the person who holds it. For example, the belief in witchcraft, formerly so common in this country, and still prevalent to some extent in remote districts, is erroneous. If a superstitious peasant said he believed in the existence of witches, and that they could cast a spell over cattle so that they would shortly die, it might not be evidence of insanity; but if an educated, scientific man held the same opinion, it would certainly be considered evidence of unsoundness of mind.

In some cases the delusional nature of a belief can only be recognized by comparing it with former convictions. A common instance of this is the delusion of unworthiness, with the fixed belief that there is no hope in this world or the next. It is frequently found that the present statement is entirely opposed to the patient's religious convictions before his illness.

Delusions are usually inaccessible to argument, as the reasoning faculty is at fault, and conclusions are reached without proper investigation or comparison with past experience. Generally, a delusion needs no support; the conviction of its truth is sufficient. If attempts are made to demonstrate the falsity of the belief, the patient may listen to the arguments used and serenely reassert his original opinion. If

further attempts are made to explain how mistaken he is, with perfect confidence he will say, 'I know I am right.'

A delusion is, therefore, a false belief dependent upon defective power of reasoning, and is beyond the influence of argument and criticism. It is difficult to define a delusion so as to cover all cases, but that given by Dr. Clouston is practically sufficient: 'A delusion is a belief in something that would be incredible in sane people of the same class, education, or race as the person who expresses it, this resulting from diseased working of the brain convolutions.'

In some cases a delusion seems to be an outcome or *development* of an existing morbid condition. For instance, a patient feeling himself thoroughly depressed and miserable may endeavour to find an explanation of his painful condition, and at last a delusional interpretation of them is evolved. Conscious of his distress of mind, he seeks a cause, and begins to think it must be due to wrong-doing in the past. Soon he is convinced that his present suffering is a judgment upon him for his past sins. Finding no relief, it is but an easy step to the further delusion that he has indeed committed the 'unpardonable sin,' and is lost for ever.

In other cases the delusion appears to arise suddenly in connection with illusions or hallucinations. This has already been mentioned, and we have seen that there is frequently an intimate connection between hallucinations and delusions, and that they seem to appear simultaneously. Something seen or heard during delirium, or an idea presented to the mind in sleep, may be remembered, and a delusion dating from this experience may last for years.

In many other cases delusions are of very slow growth, and it is impossible to say when they first appeared. Not rarely, intimate friends and relatives are unaware of their existence. Some strange remark or action may attract attention, and, to their surprise, fully developed delusional insanity is found to exist. Then, on looking back, it becomes evident that this must have been of long standing, and very probably a number

of singular incidents will be recollected which evidently were symptoms of mental disorder, although at the time this was altogether unsuspected.

In this connection it should be explained that in certain cases of insanity the delusions are dependent one upon another, and are slowly developed into a system. The primary morbid belief results in the gradual growth of a number of secondary ideas. Thus, a delusion of suspicion gradually gives rise to delusions of persecution, and then, possibly, delusions of grandeur develop. In such a case the delusions are said to be *systematized*. When they are independent of each other, and not woven into one system of delusional ideas, they are sometimes said to be *non-systematized*. A *fixed* delusion is one that does not alter from day to day; and delusions are said to be *fleeting* and variable when they come and go, lasting but a short time, and are constantly changing as to their character.

Kinds of Delusion.—Delusions are very varied in character, and they concern all forms of human experience. It is impossible to mention more than a few of the more commonly occurring ones. They may be classified under three heads* :

Delusions affecting the individual's knowledge of himself.—A patient may think he is in reality another person (*delusion of identity*), or he may think some part of himself is changed, that he has no inside, or that his brains have been removed. He may falsely believe he has some serious ailment or disease, in spite of all evidence to the contrary (*hypochondriacal delusion*).

Delusions affecting himself in his relation to his surroundings may be either pleasurable or painful.

A patient may think he is an exalted person or is possessed of great wealth (*delusion of grandeur*). On the other hand, he may think he is an outcast, unworthy to meet anyone, and is altogether wicked; or he may believe he has committed

* Adapted from Mercier.

a great crime (*delusions of unworthiness, sinfulness, and self-accusation*), or that something dreadful will happen (*delusion of impending calamity*).

Delusions affecting his surroundings in relation to himself may also be pleasurable or painful in character.

A patient may believe honours have been conferred upon him, or he may look upon his surroundings as hurtful. He may think his friends are unfaithful (*delusion of suspicion*), or he may think there is a plot to injure him (*delusion of persecution*). In other cases he may believe that he is subject to some occult influence, that he has been acted upon by electricity, hypnotism, wireless telegraphy, or X rays (*delusions of unseen agency*), or he may think persons read his innermost thoughts (*delusion of thought transference*).

Delusions of Special Importance. — The delusions which arise out of a *depressed* state of mind are important from a nursing point of view. Patients who believe they are outcasts and unfit to associate with others, or those who expect shortly to suffer the punishment of their crimes, are likely to attempt to commit suicide. The same danger often arises when a patient believes that a terrible calamity will happen very soon, and he would rather die than face the inevitable catastrophe.

Delusions of suspicion are also important. They usually begin insidiously. The patient begins to doubt the good faith of those dear to him; soon every little act is misconstrued; he sees a hidden meaning in everything that happens, until he is suspicious of almost everybody, and feels there is no one he can trust. The nurse will necessarily find it very difficult to influence such a patient; the best intentions will be viewed with suspicion, and in not a few instances the nurse may feel that nothing can be done to win the patient's confidence. Such cases are most unsatisfactory and discouraging, and it requires no little fortitude to persevere in doing one's best.

Patients with *delusions of persecution* are apt to be dangerous, and they require special care in treatment. Many such

patients believe there is a widespread conspiracy, in which perhaps the medical officers and the nursing staff are involved. With the fixed idea that they are being wronged, or are being deprived of their rights, or are about to be put to nameless torture, acts of violence are to be expected. Many of these patients are very intelligent; some are cunning and conceal their intentions. It is therefore of great importance that the nurse should be vigilant, sparing no pains in the endeavour to understand the patient, and in preventing access to dangerous articles likely to be used amiss.

Delusions of a different kind may be exhibited in the same patient. The combination of delusions of suspicion with those of persecution has been already alluded to. In depressed states it is not rare for a patient to think he is unfit to live, and also believe his bowels are entirely stopped and he cannot digest any food.

It will be readily seen that it is very important to ascertain the delusions of every patient, so that appropriate treatment can be undertaken and difficulties in management avoided.

G. **Imperative Ideas and Obsessions.**—In a slight degree we are all subject to imperative ideas. Thus, a jingling rhyme may 'get into our heads,' and, against our wish, it is constantly repeated; or a fragment of a tune, which cannot be set aside, again and again comes into consciousness, and we feel annoyed with ourselves because we cannot resume our ordinary habits of thought. In diseased conditions the intruding idea may be something altogether silly and absurd; and although the patient is fully conscious of this, the idea remains, in spite of an urgent desire to get rid of it. In some cases the imperative ideas are so distressing that the whole attention is directed to them, and the patient may be unable to undertake ordinary duties.

Imperative ideas are defined as 'morbid suggestions and ideas imperiously demanding notice, the patient being painfully conscious of their domination over his wish and will.'

The terms 'obsession' and 'imperative idea' are used in the same sense by most authors, although some consider an obsession as a development of an imperative idea. Thus, an *obsession* is said to be 'an imperative idea associated with a state of anxiety, there being no marked disorder of consciousness and judgment.'

There is, therefore, no intellectual disturbance in most cases beyond the unbidden thought or idea which haunts the mind and which cannot be dispelled. The obsession is recognized to be morbid, and the patient begs to be relieved of it.

The great majority of persons suffering from imperative ideas and obsessions are not insane, as they are fully capable of looking after themselves; but in exceptional cases the ideas so monopolize the attention, or the patient, in order to obtain peace of mind, may behave in such a strange way that he becomes unable to take his place in ordinary society. In rare cases, moreover, the state of the patient may be so miserable that suicide is contemplated or attempted. In such cases the patient is placed under care, as of unsound mind.

Many insane patients are influenced by obsessions. Thus, some always walk along a defined route, or touch certain things as they pass along a corridor; others feel impelled to lie in bed in a particular way. If prevented, such patients are often irritable, and may become violent.

Obsessions occur in great variety, and only a few of the more common forms will be mentioned. They can be divided into three groups: (1) *Intellectual*, (2) *impulsive*, (3) *inhibitory*. It may be observed that obsessions are partly disorders of the intellectual powers and partly disorders of volition, and obsessions might have been included under the latter head were it not that the ideas in question are strange, and due to disorder of the thinking powers.

1. **Intellectual Obsessions**, unaccompanied by voluntary acts.—The consciousness of the patient is dominated by some strange idea. For instance, the idea may arise and constantly recur that, if a certain trivial thing had been done, all would have been well. No effort will succeed in banishing the notion for more than a short time. Sometimes the patient is unable to think of anything without the intrusion of the idea into the sequence of thought. The imperative idea may be, and generally is, something quite foolish

and foreign to any subject under consideration, and the patient himself is generally quite aware of its morbid nature.

2. **Impulsive Obsessions**, in which the imperative idea tends to be expressed in action.—The patient is persistently troubled with a desire to do something he knows to be foolish or wrong. He may struggle for days or weeks against the obsession, and in the end he may find it irresistible. The impulse is sometimes quite trivial, such as a desire to pick up and read a piece of paper seen in the street, or to step over the joints of paving-stones, or to count so many numbers before doing anything; at other times it may have serious results if not successfully resisted. Some of these impulses have received special names: for instance, a desire to steal articles without motive—*kleptomania;* to set things on fire—*pyromania.* These are impulsive obsessions.

In some cases the obsession is even more serious. A devoted father may be obsessed with the idea that he must murder his child, and to escape from the horrible thought he may voluntarily place himself under care.

3. **Inhibitory Obsessions**, in which there is an inability to undertake some ordinary duty or perform some accustomed act. —Two forms may be mentioned: (*a*) Morbid doubting, (*b*) morbid fears.

(*a*) *Morbid Doubting.*—All of us are sometimes in doubt what to do or what to believe. In some cases of insanity and certain allied mental disorders, the difficulty in arriving at a decision is greatly increased, and the delay or hesitation may be so serious that practically nothing is done. The doubts may refer to some quite ordinary matter, such as whether a letter was put in the right envelope or whether the gas was turned off; or they may involve some important questions, such as the correctness of a balance-sheet or the truth of religious convictions. It is characteristic of morbid doubting that investigation or explanation does not set the mind at rest, but the difficulty recurs, although the patient generally recognizes the morbid nature of his condition.

Allied to this is a condition in which a patient hesitates to do some simple thing because he fears it may be wrong to do it. This in like manner may greatly interfere with the proper discharge of duties and responsibilities.

(*b*) *Morbid Fears.*—Altogether unreasonable fears may arise, which, although known to be groundless, yet cause constant anxiety. The patient feels unable to resist the idea that perhaps, after all, there may be justification for his fears. They may be explained away, but they recur, and cause great distress of mind.

These fears may take different forms, one of the commonest being the fear of contamination from touching certain things, which generally leads to constant washing. If prevented from performing these unnecessary ablutions, the patient is extremely uncomfortable, and may suffer acute distress. Some patients have a dread of open spaces, some of small rooms; in other cases there is a dread of

infection, and patients may walk miles to avoid meeting a person who may possibly have been near a case of the particular disease in question. In this case the fear arises quite independently of the possible transmission of the disease by ordinary channels. It is essentially unreasonable, and the patient generally understands that this is so.

It should be understood that the existence of obsessions is by no means so distinctly a symptom of insanity as is the case with delusions or hallucinations. They usually occur in persons well able to discharge the responsibilities of life, although in extreme cases, as we have seen, the border-line is passed, and the patient requires treatment in an asylum. It must not be forgotten that this is the exception, and that the great majority of persons suffering from obsessions do not become insane.

Imperative ideas and obsessions are very troublesome and distressing symptoms; they have an unfortunate tendency to recur, and may last for years and greatly interfere with the sufferer's peace of mind and usefulness.

DISORDERS OF VOLITION.

Symptoms chiefly affecting the power of 'willing.'

These symptoms fall into two groups: First, those which are characterized by an inability to perform accustomed acts; second, those marked by an inability to control actions.

A. Inability to perform Accustomed Acts.

(*a*) **Lack of Will.**—Some patients find it extremely difficult to come to any decision. They cannot make up their minds to do the most ordinary thing, but hesitate and delay and waste a great deal of time before making a start. The man who is reported to have spent half the morning in making up his mind which leg to put in his trousers first is but an extreme case of this not uncommon symptom.

In other cases the patient is unable to undertake ordinary work. If a start is made, he soon breaks off, saying he cannot continue. He can generally give no reason for this. Sometimes under pressure the work can be done, but with extreme difficulty. Next day perhaps it is not attempted. This state is extremely like the effects of fatigue, but it may occur first thing in the morning after a good night. This defect of will-

power may occur in persons who are otherwise intelligent, as well as in the insane.

It should be noted that patients in this condition are wishful to work, and deplore their inability. As a rule they are at the same time depressed and vividly conscious of their ineffectiveness. There is no indifference or carelessness as to their duties, and no wish to shirk anything. In this respect they are in striking contrast to the 'weary Willies' who so frequently come under the care of the Poor Law authorities.

(*b*) **Resistiveness.**—Some patients will resist everything done for them. Any attempt to induce them to get up and dress, or to undress and go to bed, to go out for a walk, or to return to the ward, is opposed. This condition is sometimes termed *negativism.*

If left to themselves, such patients stand about aimlessly, are frequently inattentive to the calls of nature, and may refuse food, so that forcible feeding is required. In marked cases the urine is retained and the catheter may be required, and enemata may be needed in order to remove the accumulated contents of the bowel. In some cases these symptoms are strangely variable, and they may pass off quickly without any apparent cause; in the majority of cases certain actions seem to be performed much better than others.

Resistiveness is sometimes associated with depression, and in these cases the association of ideas seems to be very slow; patients may not reply except after a long interval, then in a halting, disjointed way, and generally in an undertone.

In other cases the lack of will-power above mentioned may be a factor in the case, the patient resenting the pressure put upon him to do that which he cannot do of his own accord.

More commonly, however, the resistiveness arises from some overpowering and painful delusion, and the belief that everything proposed is hopelessly beside the mark compared with the all-important matter that dominates the mind.

In other cases patients actively resist because they fear they are going to be injured. Sometimes movement may be painful, and the possibility of some injury or disease must be remembered.

(*c*) **Stereotyped Attitudes** are frequently met with in the insane. The term is used when a patient tends to assume and continue for a long time in some peculiar attitude. All kinds of strange positions may be taken up, and sometimes they are forcibly maintained for long periods of time. The arms may be held tightly to the side with the hands clenched, or a patient may refuse to sit down, but stand in a bent, awkward position for hours.

It is not uncommon for a patient habitually to assume a definite position in bed, and invariably sleep in this attitude.

(*d*) **Catalepsy.**—In other cases the limbs can be moved, but they tend to remain in exactly the position in which they are left. In an extreme case a patient's position can be altered, and it will remain unchanged until moved again in the same way as a wooden lay-figure is posed by an artist. If one arm be raised, it remains in the air; flex the elbow, and it continues bent. This condition is usually termed *catalepsy*. In most cases the extended limb will slowly fall with its own weight, but in rare instances a patient may be placed in a most uncomfortable position, and remain, without attempting to move, for hours together.

Cataleptic states only occasionally occur in the insane, and are generally associated with stupor. They are probably due to suggestion, the patient automatically doing what is required of him, although at the moment he may appear not to notice anything that happens.

B. Inability to control Actions.

Another disorder of volition is due to defective inhibition. The controlling powers exerted by higher centres are no longer operative, and the lower centres, acting as it were on their own responsibility, lead to the performance of disorderly and possibly dangerous acts. The part taken by inhibitory influences in the mechanism of the nervous system has already been mentioned. This defective control may occur in unconscious states, and also without loss of consciousness. It will be convenient to discuss these separately.

(*a*) **In Unconscious States.**—If a person does anything unconsciously, whether it be some simple act or a series of complicated movements, the action is said to be *automatic*.

There are a number of unconscious states in which automatic acts may occur, the most important of which from the nurse's point of view is found in some cases of epilepsy. In this disease an automatic act may precede the fit or follow it, and in some cases it may take the place of a seizure.

The acts in question may be of small consequence, such as getting up suddenly and going out, or undressing and going to bed in the daytime; or they may be serious acts of violence, or strange and aimless wandering in the country. It occasionally happens that an epileptic patient may suddenly seize a knife, or anything at hand, and attack, and even murder, a bystander, without the slightest recollection afterwards of the incident. Sometimes it may appear that the act was purposive, in that definite plans were made and cunning displayed, but all this may be unconsciously done in the automatic state. More commonly, however, the sight of the knife or weapon seems to suggest the violent deed. Further consideration will be given to this important subject in describing the symptoms of insanity due to epilepsy.

Impulsive Actions.—In other conditions sudden automatic acts occur which are impulsive in character. The patient is either unconscious or only partly conscious, and is quite unable to control the impulse. Such acts may occur in states of confusion and delirium, and also in alcoholic intoxication. In the insane sudden impulses sometimes arise without apparent cause. A patient may be the victim of a sudden irresistible *suicidal* impulse. He can give no explanation of it; often his mind is a blank in regard to it, and he may deny in perfect good faith that he ever made any such attempt. The attack may even come on without warning. Sometimes the impulse is *homicidal*, and serious assaults may take place without any discoverable motive.

Again, the impulse may consist of a sudden desperate attempt to get away, to escape anywhere or anyhow, or it may take the form of wandering. The patient may go long distances and perform complicated acts of which he has after-

wards no remembrance. He may suddenly wake up and find himself in an unknown part of the country. Some of these impulsive acts are probably allied to epilepsy, although the subjects of them do not develop epileptic fits.

Automatic acts occur in other conditions which seldom concern the mental nurse. *Sleep-walking,* or somnambulism, is automatic. It is common in children and in young adults of a 'nervous' disposition, but is rare in the insane. A great variety of actions may be performed in sleep. Sometimes the somnambulist may walk along dangerous parapets, but it is very rare that any harm will befall him, whilst an attempt to injure another, or to do violence of any kind, very rarely occurs.

(*b*) **Without Loss of Consciousness.**

(i.) **Restlessness.**—In a large number of patients restlessness is a prominent symptom.

In certain depressed patients the restlessness is merely the expression of mental distress. The patient sits rocking to and fro, uneasily twitching his fingers, or perhaps paces backwards and forwards, wringing his hands and moaning, looking the picture of misery. Many such patients cannot remain still day or night. They can settle to no occupation, they take no interest in anything, and are never still, often standing or running about at meal-times. At night they are constantly in and out of bed; they cannot sleep themselves, and will not let others do so.

The nurse should, however; bear in mind that restlessness may be due to fatigue or to definite bodily disease. It is well known that persons over-tired cannot keep still, and the attempt to remain quietly in bed sometimes results in an almost intolerable feeling of unrest. This may be accompanied by twitching of the muscles and jerking of the limbs, popularly known as 'fidgets.' This occurs in quite healthy persons when worn out with fatigue. It is also probable that much of the restlessness in the insane is also due to exhaustion of nervous energy.

Many diseases are accompanied by restlessness. It is a most painful and trying symptom in almost every disease in which there is profound exhaustion, and in particular it is very common in advanced heart disease. It is evident that the possibility that restlessness in the insane may be due to some physical cause must never be overlooked.

(ii.) **Stereotyped Movements.**—When a certain movement is constantly repeated in exactly the same way, it is said to be 'stereotyped.'

Such movements are very varied in character. They may be merely grimaces or gestures, or strange peculiarities in gait, or purposeless actions such as rubbing the hands or head, or rocking movements of the body.

Patients can rarely explain these peculiar stereotyped movements. Sometimes the constant movements will produce changes in the skin, such as bald places on the scalp, or sores on the face, or patches of thickened skin upon the hands.

It is also not uncommon for patients constantly to repeat the same remark or phrase. The words repeated may in themselves be sensible (such as, 'I want to go home'), but the never-ceasing repetition, quite irrespective of response, or even attention, from anyone, shows that the words are said in an automatic manner. In many cases, however, the words or syllables repeated are entirely devoid of sense. Strange, peculiar noises are also made and constantly repeated, apparently without motive.

Stereotyped movements and senseless repetition are often seen in states of enfeeblement of mind, and in particular in the dementia of adolescence (p. 298).

(iii.) **Conscious Impulse.**—It is not common for patients to be irresistibly compelled to do a strange or violent deed, except when partly or completely unconscious. There are, however, some cases of obsession in which the dominating thought seems to master the will.

(iv.) **Strange, Foolish Actions.**—The subject has already been mentioned in describing obsessions. Foolish, uncontrolled, irresponsible conduct is commonly met with amongst the insane. It requires no special description. All kinds of strange, incomprehensible acts are performed, many of which are prompted by some momentary idea, and are at once acted upon, without thought of the consequences.

(v.) **Self-Indulgence.**—The defective inhibition and lack of control occurring in many insane persons frequently leads to immorality, intemperance, and vice. This is very evident in the early stages of general paralysis, where excesses of all kinds may occur and the moral sense is entirely blunted. The same is found in other maniacal states, and in many cases of dementia no attempt is made to control the passions.

In considering the question of self-indulgence, whether it be alcoholic intemperance, or drug habit, or sexual excesses, we are constantly confronted with the difficulty of deciding how far these are the causes or the effects of the mental disease attending them. The truth is, they may be either one or the other, and sometimes both, in that the indulgence produces disease, and disease indulgence, so that a vicious circle is formed which if unbroken rapidly hastens degradation. It is not possible, however, to lay down any general rule. A nurse confronted, as is inevitable, with self-indulgence in its grosser forms must not forget that, in the great majority of cases that come under notice, these deplorable symptoms are undoubtedly the consequence of disease, and but for this would never have developed. Acquaintance with mental infirmity certainly tends to make us charitable towards human weakness.

INSANE HABITS AND PROPENSITIES.

Under this heading are mentioned a number of symptoms of insanity which can be most conveniently described in connection with disorders of will. They are roughly separated into two groups: (*a*) Those which concern society, and (*b*) those which chiefly affect the patient himself.

(*a*) *Insane Habits affecting Others.*

(i.) **Indecent Conduct.**—It is extremely common for patients to break through the conventions of society and disregard the decencies of life. All the restraints imposed by civilization may be thrown aside, and the whole conduct becomes offensive and outrageous in the extreme.

In many cases the departure from the normal is so great as to raise the question, How is it possible that any person respectably brought up can become so degraded and so lost to a sense of decency?

In any given case it is difficult to furnish a satisfactory answer. To do so would require an intimate knowledge of the past life of the patient, what books had been read and what remarks overheard. There is reason to believe that everything which has been seen and heard during the whole life of the individual is stored by the memory, that nothing once perceived is entirely lost; and if this be so, it must be admitted that there are very few persons who have not accumulated a store of experiences which may either furnish unpleasant dreams when sleeping, or through mental derangement be expressed in offensive speech or conduct. It must also be remembered that in the insane there is frequently no self-restraint, the lower animal nature is no longer in subjection, the thoughts cannot be controlled, so that the conversation and the whole behaviour is shameless and indecent.

(ii.) **Dirty and Faulty Habits.**—Unclean and dirty habits are usually due to indifference and utter carelessness on the subject of personal cleanliness and the comfort of others. In a recent case of mental trouble, wetting the bed is frequently a sign of grave import. It may be the earliest symptom of delirium or confusion, and in any case indifference on such a subject indicates a considerable depth of mental disorder. In mania, the rush of ideas may sometimes prevent the patient from attending to anything, and so he does not heed the calls of nature.

In a few cases dirty habits are purposive and intended to give trouble. Some of the most difficult cases to deal with are directly dependent upon delusions.

It must never be forgotten that patients may be wet and dirty from physical weakness or bodily disease.

There are a number of other propensities commonly met with in the insane which hardly demand special description, although of great importance as affecting the comfort and welfare of others. Some of these only can be mentioned.

Noisy, turbulent conduct; shouting and *screaming*, sometimes for no assignable reason; *acquisitiveness* and *stealing*; the *collecting of trifles* and the *hoarding of rubbish*; *aimless destructiveness*; *extreme unsociability*; *domineering* and *intolerant behaviour*, are some of the ways in which the antisocial character of many forms of mental disorder is exhibited.

(b) Insane Habits injurious to the Individual.

(i.) **Refusal of Food.**—Refusal of food is a symptom of great practical importance, and is met with in different degrees, from a capricious disinclination to eat, to a persistent, complete refusal to swallow anything.

In most cases it is associated with loss of appetite, yet in certain delusional cases the patient will take nothing, notwithstanding extreme hunger. In all cases the possibility of bodily disease must be considered. There may be some disorder of the œsophagus, stomach, or intestines, or other condition interfering with digestion. It must ever be remembered that the insane frequently do not complain, and disease of the alimentary canal may not be suspected. Careful observation of the symptoms by the nurse will, however, greatly assist the physician in ascertaining the facts. In many general diseases, the assimilation of food is greatly interfered with, and little food is required; and if much be insisted upon, acute indigestion, with vomiting and diarrhœa, is the result.

Refusal of food is often connected with a fixed idea that it cannot be properly digested. Not rarely such patients have been 'martyrs to indigestion' for years, and have gradually curtailed their diet until they habitually eat too little, and their general nutrition suffers greatly.

In acute maniacal excitement patients frequently refuse food through the impossibility of fixing their attention upon anything, but it is rarely persistent, and a meal may be greedily eaten a few minutes later. In delirium the patient cannot eat or drink anything, as a rule, owing partly to the extreme mental disturbance, and partly to the loathing of food consequent upon disorder of the digestion.

Food may be refused on account of delusions. The patient may think it wrong to eat, or that the food cannot be paid for, or that he is depriving another, or he may believe that what is provided is too good for him.

On the other hand, he may consider his food poisoned, or bad and unfit to eat. He may even imagine that he is a deity, or that he is dead, and consequently requires no food. In melancholia there is generally little appetite, which may amount to a marked distaste for food, and this is not infrequently associated with the delusion that the bowels are blocked, and that nothing ever passes through the intestines.

The refusal of food may also be dependent upon hallucinations of taste or smell, or from dictation by 'voices' saying that nothing must be taken. It may also be purposive, and be due to a wish to commit suicide.

In other cases this symptom is but part of a general condition of resistiveness. Lastly, in extreme cases of dementia, patients may take no food owing to the general decay of the mental faculties rendering them incapable of expressing or attending to their needs. If not regularly fed by the nurse, they will die of starvation.

(ii.) **Self-Mutilation and Other Injurious Habits.**—In a number of different ways insane persons damage themselves without intending to commit suicide.

Patients occasionally burn themselves deliberately, or cut off a finger, or lacerate themselves. All kinds of injurious things may be swallowed.

Minor degrees of this tendency to damage themselves are very common; biting the fingers, pulling out the hair, and picking the skin, are frequent symptoms in severe melancholia.

(iii.) **Improper Habits.**—Mention may here be made of sexual malpractices which are a common symptom of insanity. Indecent exposure and disgusting habits frequently occur, and they may exist in cases in which the person's life and conduct before the attack of mental disorder have been altogether above reproach.

(iv.) **Suicidal Tendency.**—The question whether persons of sound mind commit suicide in this country is hardly within the scope of this handbook.

Suicidal attempts occurring in the insane may be due to sudden impulse or may be deliberate.

Suicide from Sudden Impulse.—This may occur in unconscious or semi-conscious states, as in alcoholism, epilepsy, and in sudden temporary conditions in the course of delirium, acute mania, and acute melancholic states. The impulse may be conscious, and be due to a sudden vivid hallucination or some overpowering obsession. In many depressed cases the mere presence of the opportunity will give rise to a sudden suicidal impulse.

Suicide may be Deliberate.—It may be attempted in order to escape imaginary danger or disaster. Sometimes it is due to the wish to relieve friends or relatives of financial burdens or some fancied disgrace. More commonly it arises from a desire to obtain relief from bodily or mental suffering. The distress of mind may seem intolerable, and the patient despairs of obtaining relief in this world. Some dreadful delusion may prompt the act, or it may depend upon repeated hallucinations, such as the command of a voice from heaven.

In some few cases the desire to live is lost without any definite depression or delusional state, and the natural sense of well-being is replaced by a loathing of life.

In considering self-destruction, it should not be forgotten that patients not rarely put an end to their lives accidentally. They may place themselves in perilous situations without any definite motive, or they may eat yew-leaves, or drink carbolic lotion, or swallow glass, for no particular reason. Many deaths occur in asylums which are not suicidal, although directly dependent upon the acts of the patients themselves; *e.g.*, in not a few cases attempts to escape have resulted in fatal accidents.

CHAPTER IV

FORMS OF INSANITY.

Introduction. — In previous chapters the symptoms of mental disorder have been described, and the habits and peculiarities of the insane have been discussed and explained. It is now necessary to consider insane individuals as patients to be nursed, and to do this combinations of symptoms must be described and classified under various heads. This question of the classification of diseased states can be looked at in two different ways: (1) Their general aspect as seen in the wards—that is, the main features which can be recognized upon examination, irrespective of cause, duration, or result. (2) The disease producing the symptoms, implying a knowledge of its history, course, and probable termination. This difference can be illustrated by reference to other diseases. We may either say that a person with raised temperature is (1) suffering from fever, and that the fever is continuous or intermittent, as was formerly the practice; or (2) we can recognize the disease causing the fever, and say it is a case of scarlet fever or measles, as the case might be. The same distinction applies to jaundice, dropsy, apoplexy, and many other diseased states.

But in dealing with insanity our knowledge is not sufficient satisfactorily to distinguish separate diseases, and, with certain exceptions, we cannot as yet label our cases with distinctive names, as is possible in most bodily diseases—*e.g.*, pneumonia, mumps, or gout. Until we can say much more accurately than at present what structural changes in the brain produce this or that mental disorder, it will remain impossible to classify forms of insanity in a satisfactory way. All schemes of classification have hitherto failed, and in consequence there is much confusion of names.

For all practical purposes, it will be sufficient to describe

the forms of insanity under two main heads, corresponding to both of the methods already mentioned of viewing the subject. First, a series of states of insanity will be described which will include the clinical description of almost all the mental *states* with which the nurse is likely to meet. Secondly, some of the *kinds or varieties of insanity* will be described, giving particulars of their symptoms, and probable course and termination, together with some special forms due to well-recognized causes.

It must, however, be remembered that a patient may in the course of an illness present varying symptoms, or that the mental state may change from time to time. Moreover, a patient may exhibit more than one of the states described hereafter.

In studying any particular case, the nurse should first find out which of the states of insanity correspond with the symptoms exhibited. At the end of the description of each state will be some account of the conditions which may produce it, with references to further descriptions when these are wanted. Only the more common forms of insanity are described.

But the important thing is not so much a question of classification or correctly labelling any condition, as the proper recognition of the mental and bodily symptoms that may exist. What the nurse should possess is as intimate an acquaintance as possible with the patient's thoughts, emotions, desires, and impulses, so that he may be first thoroughly understood and then appropriately treated. In this field of inquiry the nurse has many advantages over the physician, owing to the close personal relations with patients and the opportunity for continuous observation. In consequence of this, the physician receives material assistance in making a diagnosis, and in deciding what treatment to adopt, from the reports of an observant and careful nurse.

FORMS OF MENTAL DISORDER.

The following is the classification adopted:

States of Insanity.

A. Depression: Melancholia—simple, acute, chronic.
B. Excitement and exaltation: Mania — simple, acute, chronic; also recurrent forms and alternating insanity.
C. Delirium.
D. Stupor.
E. Confusion.
F. Chronic delusion: (*a*) Fixed; (*b*) progressive.
G. Mental enfeeblement.

Kinds or Varieties of Insanity.

A. General paralysis.
B. Insanity from brain lesion.
C. ,, ,, epilepsy.
D. ,, ,, alcohol.
E. ,, connected with childbirth.
F. ,, during adolescence.
G. ,, of old age.
H. Idiocy and other forms of congenital defect.

Examination of Patients.

A few words are necessary as to getting at the mental condition of patients. Nurses are always in difficulties at first how to observe, and then how to describe, what they learn about those under their care. A table such as the following may be helpful, and assist in making a report if it should be required.

1. *By Observation.*—What can be seen and noted by the nurse :

General appearance, attitude, tidiness, cleanliness.
Facial expression.
General health, colour, nutrition.
Physical peculiarities.
Actions, behaviour, conduct.

2. *By Conversation.*—A talk upon general topics will generally elicit a great deal respecting the—

Emotional state.
Power of attention.
Consciousness.
Power of connected thought.

By inquiry the state of the mind can be further investigated in respect to the—

Memory.
Presence of hallucinations, delusions, or obsessions.
Difficulties in respect to self-control.
Impulsive tendencies—suicidal, homicidal.

3. *Letters* written by the patient, when available, frequently exhibit want of self-control and defective judgment to a greater extent than the conversation and general behaviour. The same applies to needlework, book-keeping, drawing, painting, or any other *handiwork* that has recently been attempted.

4. *Second-hand information* obtained by inquiry from others will yield valuable information when trustworthy.

STATES OF INSANITY.

Under this head are placed a series of insane states which will comprise almost all those the nurse is likely to meet with. After the description of each state will be found a reference to some of the conditions which may produce it when these are known.

STATES OF DEPRESSION.

Mere depression of spirits does not constitute insanity. This is only said to be present when the feeling of misery deepens to a degree disproportionate to the personal or social surroundings—when, for example, a man begins to neglect his business and live a solitary life, loses interest in his family or his own personal wants, or attempts suicide. He may then be said to be suffering from melancholia, and such cases form the largest class of the recent insanities.

Melancholia.—When such a case is under consideration, the depressed appearance and attitude are at once evident, generally showing on the surface by the dejected demeanour and the facial expression of misery, the furrowed brow and drooping mouth. The feeling of ill-being is generally intense and all-absorbing, and prevents the patient from taking a reasonable interest in his surroundings. The thoughts are self-centred, so that a melancholic patient is often most selfish, even while professing himself as utterly unworthy of any consideration whatever. The conduct is generally, apart from that portion prompted by the delusions, rational, and orders are obeyed without argument, although without interest or energy. Some are fussy and irritable, and insist on pouring out their woes to anyone who will listen. There is rarely any trace of incoherence. The emotions are easily stirred in respect of the patient's own condition, but as regards outside circumstances there is a marked lack of interest. If there is headache, an effort of memory or of attention may cause increased mental pain, which may be a source of worry to the

patient and may greatly add to his misery. The power of connected thought is diminished, few plans are formed, and no intellectual work is accomplished except with a great expenditure of exertion; fatigue, uneasy head feelings, buzzing or throbbings, may be the only result. Melancholics are generally modest and dignified and well-behaved.

In the most common and most typical states of depression delusions are prominent. These delusions are always of an unpleasant nature. The patient is a sinner—ignored, reviled, hated, despised, but always justly so in his own view of his unworthiness.

The commonest class of delusions is of wrong-doing, with its related idea of impending retribution, social or religious. An error of conduct, imaginary or otherwise, however slight, is to be followed by a punishment altogether out of proportion to the offence. Auditory hallucinations are very common in this class of case; the patient hears God telling him, either personally or through some agent, that a just retribution awaits him. Next to these come delusions of poverty. Visceral delusions are also common, such as that there is no passage through the bowels or that there is no stomach. These are often really illusions, since constipation or some actual disease may be at the bottom of the feeling. Delusions strongly influence the conduct in melancholia, and lead to the refusal of food (see p. 253). The suicidal impulse is very strong in melancholics; even if a patient thinks he is eternally damned, he will still try to take his life in order to escape from present ills. A homicidal impulse is sometimes exhibited towards near and dear relatives, under Divine orders or to save them from future misery.

The bodily condition may not be affected in slight cases, but generally there is loss of flesh, with gastric disturbance. The tongue becomes furred, the breath foul; torpor of bowels is nearly always present. So important is the digestive disturbance that some assign the chief cause of melancholia to the bacterial products absorbed from the intestine into the

blood. With the general malnutrition subcutaneous fat is lost, the muscles become flabby and toneless, and the pulse is small and feeble ; the skin is pale, muddy, and sallow, anæmia is more or less marked, and in women the menstrual function is disturbed, and frequently suppressed. Sleep is light and fitful, with bad dreams, or insomnia may be persistent, or the patient may be silent and watchful for hours, but appearing to be asleep.

The nursing of melancholia involves liberal feeding—forcible if necessary—with abundance of milk and green vegetables ; plenty of fresh air is required at all stages, combined with rest or exercise as may be prescribed. In many cases prolonged rest in bed, especially in the open air, is of distinct service.

States of depression vary greatly in the picture presented, and only a few symptoms may appear in any one case, but they are all fashioned on the same lines.

Although not sharply divided from each other, three types of cases may be mentioned.

1. **Simple Melancholia**, a state of depression without definite delusions, in which the patient is sad and miserable to a degree altogether out of proportion to any cause that may exist. This needs no further description. Such cases may be actively suicidal.

2. **Acute Melancholia.**—The symptoms already described are present in a more marked degree, and are accompanied by extreme motor restlessness. Frequently the severe mental distress is emphasized by reiterated cries and laments. The accompanying bodily disturbances are also more severe, and there is frequently a rise of temperature, whilst rapid wasting and sleeplessness are prominent symptoms. Death may occur from exhaustion in a few weeks, but complete mental recovery is not uncommon. Either chronic melancholia or dementia supervenes if the case be greatly prolonged.

3. **Chronic Melancholia.**—In this condition the symptoms of melancholia continue, but as a rule such patients do not

suffer as much mental pain as their appearance and conduct may suggest. The nutrition is good, and there is an absence of sleeplessness. Occasionally recoveries occur in an unexpected way after five, seven, or ten years of depression. Cases of recovery after fourteen and twenty-three years have been recorded.

Besides the conditions above mentioned, states of depression are found sometimes in general paralysis of the insane (p. 285), in insanity due to alcohol (p. 291), old age (p. 300), brain lesion (p. 287), child-birth (p. 295), and they may appear temporarily in epileptic insanity.

It is not rare for an attack of mania to be preceded by a period of depression. Alternating states of depression and excitement are mentioned later (p. 266).

STATES OF EXCITEMENT AND EXALTATION.

Excited states form, next after states of depression, the largest group among the recent and acute insanities; they are also commonly seen in chronic insanities. From the mildest elevation of spirits, excitement may be seen to increase by insensible degrees among our cases, until we come to some whose treatment taxes all the resources of asylum nursing. It will be necessary to describe these states as seen in three typical grades.

Simple Mania.—The chief feature seen in this mild form is loss of proper self-control. The general appearance and attitude may be normal, but more often there is a restlessness of manner, an increase in the mobile play of facial expression, and an inability to pursue the same theme of conversation or routine of conduct for more than a very few minutes at a time. As regards isolated acts, the conduct is normal, but shows a want of balance. Thus, a woman started vigorously to clean her front-steps half an hour after her wedding; no doubt they were dirty and required it, but the relatives considered the choice of occasion inappropriate. Again, a clergyman, after a period of depression caused by the death of his wife, to whom

he was deeply attached, commenced to write amorous post-cards to servant-girls, although able to conduct the church services normally. In simple mania patients are apt to be very talkative, but there is no incoherence. The emotional state is exalted, a feeling of pleasurable excitement is felt, and smiles or merry laughter are aroused from insignificant causes. 'Why shouldn't I laugh if I feel happy?' the patient will ask. The emotions are sane, but assume an insane prominence from want of self-control; exaggerated love, charity, or a tendency to quarrel are seen. Such patients are often officiously anxious to assist the ward nurses, but their misplaced enthusiasm may be an actual hindrance. Attention is impaired, and there is an urgent desire to get on to the next subject; thoughts crowd upon one another, and wonderful plans are formed so fast that there is not time to digest them.

Memory is normal; there are no delusions, hallucinations, or obsessions. Any impulses present are mild and comparatively harmless.

This condition is not unlike that which is present in the early and benevolent stage of drunkenness from alcohol, and possibly the absorption of some kind of poison or toxine reacting on a predisposed brain may be the explanation of these states of excitement. Simple mania may be a mild and recoverable form of insanity standing by itself, or it may be an early stage of a graver disorder.

Acute Mania.—Here mental and motor excitement are the principal features. The patient is restless, quite unable to keep still, perhaps arguing or fighting when interfered with. The conduct is unreasonable and devoid of self-restraint. The patient will, if allowed, rush about naked, talking loudly the whole time, the excitement concentrated on some line of thought or action, but this line changing every few seconds, so that the results are illogical and inconsequent. Sometimes the bystander can follow the train of ideas, but more often it is too rapid to allow this to be done. The patient is generally degraded in habits, and has no regard for social convention

or decency. Attention easily wanders; it can generally be attracted for a few seconds, but not held longer. Judgment and inhibition are gone, and are replaced by all sorts of impulsive outbursts. These are never reasoned nor tenaciously pursued, but are apparently aimless, and frequently destructive, such as breaking a window or tearing up clothing. The delusions tend towards the exalted type, are fleeting, and are never fixed, but are characterized by restless, busy change. Hallucinations are frequently present, but are usually transient; they may not be noted at the time, but only on examination of impressions after recovery. Those of sight and hearing are the commonest, but the senses of smell, taste, and touch may also be involved.

The bodily health suffers to a certain extent, but not very seriously. Sleeplessness is present, but not constant; a few hours three or four nights a week, or a whole night occasionally, may be sufficient to keep the patient going. The temperature is normal, or raised a degree. As a rule, food is taken freely, but capriciously. Dyspepsia and constipation are commonly present. Under the conditions of eating freely and sleeping a little, such a condition may persist for weeks, or even months, without causing death or prejudicing recovery.

The severity of the symptoms is greater than in simple mania, but the condition is not so serious as that described later under delirium.

Chronic Mania.—When an acutely maniacal patient begins to sleep well at night and eat heartily by day, when improvement of the physical state occurs without any mental amelioration, or when the conduct remains on the same low grade of neglect of cleanliness, then it is to be feared chronic mania is coming on. This suspicion is not always correct, but it is a safe general assumption. Patients suffering from chronic mania are excited, either spasmodically or continuously; generally speaking they are noisy, abusive, and apt to be violent. Delusions are usually present, and tend to become fixed

Auditory hallucinations also may be present, whilst visual are comparatively uncommon. The personal habits vary with the grade of degeneration—sometimes filthy, sometimes unexceptionable. The amount of excitement also varies within wide limits in different cases, or at different times in the same case. The bodily condition is not affected. There is always a certain amount of weak-mindedness combined with chronic mania. Some cases remain unchanged for years; others slowly sink into dementia, and become weak-minded and harmless, although often good workers. Whether these cases are to be classed as chronic maniacs or dements is a question which must be settled in each case independently, according to which type prevails.

States of excitement are met with in a number of other forms of mental disorder: General paralysis (p. 285), insanity due to childbirth (p. 295), alcohol (p. 291), epilepsy (p. 289), old age (p. 300), besides those occurring in the alternating states about to be described.

RECURRENT AND ALTERNATING STATES.

Recurrent Mania and Melancholia.—A discouraging feature of asylum work is the number of patients who return with another attack of insanity after a longer or shorter period. After months of careful nursing, the patient recovers, goes home, and remains well for a time; then relapses, and is readmitted as bad as ever. These recurrences are usually attributed to some illness or adverse circumstance, but most commonly they are dependent upon constitutional instability, and cannot be averted.

About 19 per cent. of the private patients admitted into asylums in England and Wales during the five years 1901-1905 are reported to have had one or more previous attacks. The real proportion is, doubtless, much higher than this, as mild attacks will have been excluded, and many other previous attacks forgotten and not recorded.

The tendency to recur is found in both mania and melancholia, and in some cases the attacks are so frequent as to justify the name 'recurrent mania' and 'recurrent melancholia.' Generally, the later attacks closely resemble the earlier ones: the same ideas arise, the same accusations are repeated; the same habits and odd actions tend to reappear.

Alternating Insanity.—Mania and melancholia may sometimes arise at different times in the same individual. For instance, a man who had had six attacks of mania was seriously depressed when insane for the seventh time; a lady who had been maniacal on several occasions had three successive attacks of depression, and then one of mania. In some cases the attacks alternate between these two states, and in others a definite cycle is developed in which mania, depression, and a quiescent state, follow each other in turn with extreme regularity. This condition has been called 'circular insanity' (*folie circulaire*). When the tendency to recur is once established, the outlook is gloomy, as permanent recovery is unlikely. In every asylum there are patients who, early in their history, recovered sufficiently to return home for a few months or longer, but as time went on the attacks became more frequent and recovery less complete. Such patients may live to a great age, and even at ninety years the cycles of emotional disturbance have been distinctly recognizable.

STATES OF DELIRIUM.

A patient suffering from **Acute Delirium** (sometimes called 'acute delirious mania') is obviously ill. The face is pinched and worn, sordes usually form on the lips, the tongue is thickly furred, the pulse rapid, and the temperature raised to 100° F. or more. If asked a question, he is unable to respond, or is only able to give attention for an instant. He talks continuously in a disjointed, incoherent way, with little or no reference to what is said to him. There is no consecutive thought.

Hallucinations both of sight and hearing are present, but

they are fleeting; and illusions are also common: the pattern on wall-paper becomes grotesque faces, the light of a lantern visions of angels. In the early stages there is much excitement, with gesticulation and frenzied impulses of all kinds; later, as the strength fails, the patient lies in bed exhausted, constantly muttering to himself, the pulse is extremely feeble and running, and in a thoroughly prostrate condition he frequently succumbs.

In all cases there is marked clouding of consciousness, familiar faces are unrecognized, and mistakes of identity are common. There is generally inability to recognize surroundings, and complete loss of memory. The patient is usually sleepless, probably talking continuously throughout the night. Food is refused, and if given by force there is often vomiting, or the food is passed undigested.

There is hardly any other condition which makes greater demands upon the skill of the nurse than the treatment of a severe attack of delirium.

Only the general lines of management can be indicated—namely:

1. Rest in bed and continuous nursing and supervision Every effort should be made to prevent the patient becoming exhausted, and the utmost tact is required in dealing with the extreme excitement.

2. Careful feeding, at short intervals, both day and night. If forcible feeding becomes necessary, it is well to have in readiness appliances for washing out the stomach should they be required.

3. In many cases enemata of dilute saline solution may be ordered.

4. Sleeplessness can sometimes be relieved by tepid sponging.

Delirium may also arise from certain well-recognized causes. Amongst these alcoholism may be mentioned, also specific fevers, especially when there is a very high temperature; it also arises after extreme exhaustion and in post-epileptic states.

STATES OF CONFUSION.

In a number of the conditions previously described, it will have been noted that mental confusion is present in some degree, but in these it is only a subordinate feature. For instance, in acute mania there is often much confusion, but the exaltation and excitement are the chief symptoms.

In a number of cases, however, states of confusion will be recognized which cannot conveniently be described under the foregoing heads. Speaking broadly, these states are intermediate between delirium on the one hand and stupor on the other. Some cases of confusion so closely approach delirium that it is difficult to draw a hard-and-fast line between them. There is the same clouding of consciousness, similar incoherence of thought and speech, failure of memory, and fleeting hallucinations. The severe symptoms of bodily illness, however, are absent.

In other cases there is a dreamy, apathetic, unresponsive, dazed state of mind which closely resembles stupor. Between these are a great variety of cases which need not be described at length. The characteristics are chiefly that consciousness is never really clear, there is generally marked disorientation, and mistakes as to the identity of persons around frequently occur. Hallucinations are common, but not persistent, and the delusions which exist are generally transient. The whole picture is vague and shadowy, and the examination of the mental state is difficult owing to the lack of definiteness in the train of thought. The conduct of the patient is often impulsive and uncertain, and cases likely to recover often have periods of perfect clearness of mind, which, however, last but a short time before the confusion returns. These, in favourable cases, tend to be prolonged, until a permanent sane condition is reached. On recovery, patients remember very little of the incidents of the illness; probably only a few shreds of memory-pictures remain. These may sometimes refer to the conduct of the nurse who may have had to control

the patient during a violent impulse. As a general rule false accusations are rare, as the patient is able to recognize that he has lost days or weeks of his life, and usually he can remember some of his strange delusions.

States of Confusion arise from many causes. Alcoholism is the most common (p. 294), but they may be found in post-febrile states after the specific fevers, and after childbirth (p. 296). Confused states also occur in epilepsy (p. 289). Sometimes they are but a passing condition, and patients approaching convalescence after a severe attack of acute mania may for a time be confused and dazed.

STATES OF STUPOR.

A patient suffering from **Stupor** presents a remarkable appearance that cannot easily be mistaken for any other condition. In a well-marked case, the patient stands motionless for hours, apparently hearing nothing, seeing nothing, saying nothing, with blue, cold extremities; saliva dribbles from the mouth, urine and fæces pass reflexly and unheeded, and probably, if food be placed in the mouth, it remains unswallowed.

Although possibly consciousness is clouded to some extent, such patients are not unconscious; they maintain their position, and usually walk with slow, dragging steps when assisted or pulled along, and, notwithstanding their apparent inattention, it is not uncommonly found afterwards that much of what has happened is recollected. The circulation is defective, and if the patient is pricked with a needle blood appears less readily than usual; there is also marked failure to respond to any external influence, sounds are unheeded, pin-pricks, and even severe pinching, do not produce any sign of pain, and anything said, whether trivial or of grave import, is apparently completely ignored.

Stupor is but a temporary condition, and sometimes is but a passing phase in the course of a case. A great number of cases recover, but it sometimes passes slowly into dementia. It is met with in varying degrees: some cases are indistin-

guishable from states of confusion; others are intermediate between these and the fully-developed state described above.

Stupor occurs in two forms, and from the nurse's point of view it is of great importance that they should be distinguished, as in one the patient may be desperately suicidal, and in the other there is less risk of accident.

1. **Melancholic Stupor (or Resistive Stupor).**—In this the stupor is accompanied by extreme depression, and is dependent upon some horrifying delusion or persistent terrible hallucination. The patient sits or stands motionless, with eyes staring, or perhaps tightly closed, and an expression of distress; he pays no attention to questions, and resists everything proposed with his utmost strength. All the time the awful fate which awaits him occupies his thoughts; he cares for neither food nor clothing; he sleeps but little, although he may appear to sleep well. He becomes thin; there is a quick, feeble pulse and some tendency to cold, blue hands and feet, owing to the poor circulation. Such patients are extremely liable to sudden suicidal impulse, which may be altogether unexpected. Thus, a man after lying several weeks in a state of deep stupor suddenly jumped up, darted into the attendant's room, unlocked a drawer, seized a razor, and fatally cut his throat. Although apparently oblivious of his surroundings, he had watched the attendant go out and leave the key in the lock and the room door ajar.

This form of stupor may end in complete recovery, and afterwards patients may give detailed accounts of their feelings during their illness. In other cases the form of stupor next to be described slowly develops.

2. **Anergic Stupor.**—This is an extreme state of 'will-lessness,' and there is reduced activity of all the senses. Delusions and hallucinations are generally absent. As a rule the limbs may be moved passively without resistance, and drop back in a resting position. Sometimes, when moved, the limbs remain where they are placed in cataleptic fixation, which may be maintained for a few seconds or last a considerable

period of time. In this way grotesque attitudes may be imposed. In one case a patient stood on a post on one foot for fifteen minutes, and then began to sway and stepped down. The pulse is slow; the heart's action feeble; there is a marked tendency to swelling of the ankles and feet, with blueness of the extremities, and sometimes the temperature is slightly raised. The breath is usually offensive; the bowels do not act, and enemata are required.

It must be remembered that stupor may often be Nature's means of resting a brain after acute mental disorder, and in any case it is unwise to urge the patient unduly to do anything.

The nursing consists of attention to the bodily health, the state of the bladder and bowels, and careful administration of food. In many cases tube feeding may be required, sometimes for months together. Hot baths are recommended in many cases; also general massage may be ordered to improve the nutrition. Abundance of fresh air is of great importance, and stuporous patients should live largely out of doors.

CHRONIC STATES OF DELUSION.

In a great number of insane states delusions are present, but they usually spring from some other mental condition, and are not fixed. Under the head of chronic states of delusion are included cases in which the delusion is the principal feature of the case. The false beliefs remain practically unaltered year after year, and the mental disorder appears to be primarily an intellectual defect with little disturbance of the emotions.

These delusional states occur in great variety, and it will only be possible to mention a few of the more common ones. In one set of cases the delusions have extremely little influence upon conduct. Patients hold the most absurd ideas, and yet work steadily in the wards or at other useful occupations. At first nothing will be noticed amiss, and on general topics conversation is reasonable; but as soon as the peculiar beliefs

are mentioned, the most extraordinary delusions are unfolded. The nature of the delusions varies greatly. **Fixed delusions of exaltation** are common. The patients believe they are of great importance—kings, dukes, or emperors; they have been changed at birth; they are deities or Christs, and have been miraculously conceived. These delusions differ from those described later under 'General Paralysis,' in that they are supported by argument, and voluble explanations are given as to the strange facts asserted. Many such patients are excellent workers. Their attitude is strangely inconsistent. The man who owns the asylum and every building in England, whose slaves are the doctors and nurses, is not in the least ashamed of begging a penny.

Fixed delusions of suspicion are not uncommon. The patient imagines himself to be the victim of *persecution* by *unseen agencies*. He is worked upon by electric currents, telephones, X rays, telepathy. The newest ideas are adopted, but usually by persons ignorant of the nature of the agency in question.

In some cases the delusions refer to *internal organs*—that snakes or lizards are living in the abdomen, or the brain has softened and run out of the skull. These delusions are often combined, and frequently they also influence conduct in but a slight degree, and patients will relate their horrible sufferings without any sign of distress.

Progressive Delusional States.—There is, however, another class of chronic delusional cases in which the delusions are woven throughout the entire mental framework, so that the whole life and conduct are affected. The delusions belong to a fully organized system, and are therefore called 'systematized.' In these cases there is a slow progressive change which runs a comparatively uniform course extending over many years.

The disorder usually begins in early life; and, though by no means deficient in intelligence, the subject is moody, fond of solitude, does not readily join in games, and early begins

to think he is misunderstood by his friends. For a time he may sueceed in business or other occupation, but in early manhood suspicions begin to develop. He begins to blame others about him, thinks he is unfairly treated, and throws up his oeeupation and starts again elsewhere; soon he again believes he is perseeuted and dogged by unseen enemies who thwart him in all he attempts. By this time hallucinations begin to trouble him: people shout after him in the streets, or make suggestive signs as he passes, all of which confirm his suspieions and fit in with his delusions. All the time he is eonseious of being superior to those about him, and attributes his repeated failure in life to the malign influence of enemies. He is pursued with spite and maliee, and after every failure the voices jeer at him, and he becomes inereasingly embittered towards those with whom he has dealings. He tries for a time to eircumvent his enemies; he pastes paper over the keyhole, endeavours to cateh the offender in some hostile act, suddenly pops out of his room if he hears an unusual sound, or closely and furtively watehes some suspeeted person. His efforts are unsuceessful, and at last, goaded to desperation, he lays plans for murdering his supposed enemy. This steady growth of delusions of persecution, beginning with vague suspieions, and ending with the eonvietion that certain persons are designedly and persistently hostile, is eharaeteristie of this first stage, and unless the patient be placed under care some deed of violenee is only too probable.

In some eases by slow degrees there appears a ehange in the delusions; the patient begins to think this perseeution is undertaken for a definite purpose, and that he must be a man of importance. These ambitious ideas correspond with his habitual attitude of mind. He has always had a high opinion of his abilities, but now definite delusions of grandeur slowly develop. Formerly he eoneealed his delusions; now he proclaims them to the world; the hallueinations beeome worse. and the patient is often noisy and abusive. In this way he

remains for years a dangerous patient, suspicious, resentful, often sulky, and altogether unresponsive to kindness, turning to rend those who would befriend him, unable to obtain comfort in anything, and causing much distress and discomfort to everyone with whom he comes in contact.

Gradually dementia sets in, unless some intercurrent disease should terminate earlier the painful course of the case.

Progressive delusional insanity is called by some *paranoia*, but this term is used in various ways, and consequently is unsatisfactory.

Chronic states of delusion also are met with in many alcoholic cases (see p. 293) and in some cases of premature dementia (p. 298).

STATES OF MENTAL ENFEEBLEMENT.

Weakness of mind is found in a greater or less degree in all cases of insanity, but the term is here restricted to a diminution of intelligence and memory, and degradation of conduct, which are of sufficient importance to form the principal feature presented. When a state of weak-mindedness arises in a person who has previously been of sound mind, the condition is termed 'dementia.'

In weak-mindedness the mental faculties are to a varying extent enfeebled, and the self-control, judgment, power of connected thought, and perception of external impressions, may be, and usually are, adversely affected. The chronic unrecoverable cases in our asylums are most of them demented, and the degree of enfeeblement varies much in different cases. In many cases the condition is stationary, and there is no progressive change. Frequently there are no hallucinations or delusions and no active sign of mental disorder, but a failure of intelligence and deficient control over conduct, which prevent the discharge of the ordinary duties of life except under guarded, sheltered surroundings. There is also considerable lack of initiative and failure to assimilate new ideas.

In some cases there are present many indications of the original mental trouble; hallucinations and delusions persist, and are often accompanied by explosive impulsive actions.

The conduct of demented patients is generally less correct than normal. Cultured ladies, formerly punctilious and refined in all their ways, acquire careless, slovenly, or even dirty habits when enfeebled in mind; whilst low-grade cases are unable to respond to any external demand, and cannot attend to the commonest wants of nature, cannot even ask for food, and only swallow it when placed in the mouth.

The bodily health is generally good, but may be impaired and accompanied by diminished power of resistance to infective disorders, especially tuberculosis. This is much more marked in low-grade dements, who sit or stand about with head bent, and cannot work or employ themselves. Under favourable conditions, however, even extreme cases of dementia live to a great age; the very nature of the malady renders asylum care necessary, and they are consequently protected from the wear and tear of ordinary life, and all their needs are intelligently anticipated.

Weak-mindedness arises under a number of different conditions, which may be grouped under the following heads:

1. **Congenital Mental Defect.**—This includes 'backward' and 'feeble-minded' persons, imbeciles and idiots, all four terms indicating descending degrees of intelligence. Such cases have never reached the normal standard, and the mental development has been arrested, so that the individual is handicapped in life's race (p. 302).

2. **Terminal Dementia.**—This term is used for the enfeeblement of mind that follows acute mental disturbance in many cases, in which recovery is only partial and there is left a permanent condition of mental weakness. It has been likened to a ship at sea which has passed through a terrible storm. Only a hulk is left; mast and sails have gone overboard, the rudder is damaged, and nothing is possible but to

drift helplessly on the ocean, at the mercy of every wind that blows. It must, however, be remembered that in some cases dementia is but slight, and though, perhaps, unable to resume full responsibilities, patients may be capable of very useful work in a limited sphere.

3. **Organic Dementia.**—The weak-mindedness which follows injury or disease of the brain is described under the head of 'Insanity from Brain Lesions' (p. 286).

4. **Premature Dementia**—a slowly developing form of progressive mental enfeeblement beginning during adolescence (see 'Insanities of Adolescence,' p. 297).

5. **Senile Dementia.** See 'Senile Insanity' (p. 301).

It should be understood that permanent enfeeblement of mind occurs in other conditions than those mentioned. For instance, it commonly arises from long-continued and excessive indulgence in alcoholic beverages; it is also an essential feature of general paralysis; and in general any disease resulting in extensive damage to the cerebral convolutions will be accompanied by dementia.

The nursing in cases of weak-mindedness is almost entirely educational. The cases sent to asylums are generally of too low a grade to be ever trained to be useful citizens, but there is a large field for the intelligent and persevering nurse in training them to perform easy ward duties and to amuse themselves with simple games, which will at least keep them healthily employed and tend to arrest further degradation. More can be done in the re-education of certain dements than would at first sight be thought possible.

KINDS OR VARIETIES OF INSANITY.

Under this head are placed a number of forms of mental disease which either present characteristic symptoms or are dependent upon some well-recognized cause.

GENERAL PARALYSIS OF THE INSANE
(SOMETIMES CALLED PARALYTIC DEMENTIA OR GENERAL PARESIS).

General paralysis is a disease of the brain producing progressive enfeeblement and decay of both body and mind. It usually attacks persons in the prime of life. With rare exceptions, it ends fatally about two or three years after its first recognition.

Pathology.—The opinion is steadily gaining ground that general paralysis is due to toxæmia, and that the changes in the brain and nervous system which characterize the disease are the result of chronic poisoning by some unknown substance developed within the body and circulating in the blood-stream. It is beyond the province of this work to discuss the reasons for this opinion, or the theories that have been propounded as to the source of the toxic substances.

The profound changes which occur in the brain and give rise to the mental and motor symptoms of general paralysis are easily distinguished upon examination after death. Their general features have already been explained (Chapter II., p. 222).

Sex and Age.—General paralysis occurs more frequently in men than in women, in the proportion of 4 to 1. About 11·5 per cent. of the male patients admitted into asylums in England and Wales are suffering from this disease, but in the case of the females the proportion is only 2·2 per cent. It is one of the most common causes of death amongst the male patients, and no less than a quarter of the male deaths are so caused (Commissioners' Report, 1907).

As already stated, general paralysis attacks persons in the prime of life, the great bulk being between thirty-five and fifty years of age. It occurs very rarely in young people, but may occasionally be met with even in children; it should be noted that in these early cases there is almost always evidence of congenital syphilis.

Stages and Duration.—It is convenient to describe general paralysis as occurring in three stages, the first consisting of the period of onset and mental disturbance that precedes the appearance of convulsions; the second an intermediate stage of mental enfeeblement and bodily weakness; the third a bed-ridden stage of general helplessness and vacancy of mind. It

must be clearly understood that these stages are not sharply defined. A fit may be the first sign observed, or convulsions may be deferred until late in the disease, or may even be absent throughout.

No definite duration can be assigned. The average is about three years. It has been observed that in recent years the duration tends to be longer than was formerly the case, and it is probable that more careful nursing is the explanation of this.

Types of General Paralysis.—Three types of case are met with, and the mental symptoms are extremely diverse in each. These types are those—

1. With excitement and exaltation.
2. With depression.
3. With mental enfeeblement without any marked emotional change.

1. **General Paralysis with Excitement.**—This is the most common type.

First Stage.—As a general rule, the earliest mental symptoms observed are a subtle change in character accompanied by instability of purpose, irritability, restless activity of mind, and a feeling of well-being and increased capacity for work. There is lessened self-control, and judgment is markedly impaired. As a consequence of this, the man becomes extravagant, is apt to speculate, believes he can rapidly amass a fortune, and at the same time is mentally very active, making all kinds of appointments, rushing about the country, and developing schemes and plans. Very probably there is also a lack of moral control, irregular living, or alcoholic intemperance; or possibly some gross form of self-indulgence, or, again, misconduct which greatly distresses his relatives, who cannot understand this deterioration of character.

As the disease progresses, the patient neglects the most obvious duties, is unable to conduct his business properly, and entertains wild schemes for the future. At last some

extravagant or outrageous act alarms his friends, a medical man is consulted, the nature of the malady recognized, and the patient is placed under care.

When he first comes under observation, the patient is usually well nourished, but in all probability worn with excitement and want of sleep. His general conduct at once shows his excitability, and he probably rushes hither and thither, talking to everyone he meets. The extreme state of exaltation is evident directly he speaks, and he will probably expound at once some grandiose idea. He cannot, however, give his attention to any subject for long, it is easy to divert his train of thought, and his conversation is disconnected and rambling.

Although he probably knows where he is, his memory is defective, and, when asked what he has been doing lately, he can only give a garbled, incoherent account. Hallucinations may exist, but a prominent feature is the presence of delusions of grandeur. The absurdly extravagant beliefs are remarkable. He is the 'King of the Universe,' possesses millions upon millions, is stronger than Samson, is the greatest poet on earth, and not unlikely is all of these at once. Generally, in every department of life, he is far in advance of anyone that has ever been born.

It will be observed that marked enfeeblement of the mind is associated with all these symptoms. There is no notion of any inconsistency in the extravagant statements, and no ability to understand their full meaning. The patient will say he possesses untold wealth, although he may be in debt and his family in want; he will declare himself able to beat anyone at billiards, when he cannot play at all; he will boast of his enormous strength, although muscular weakness is obviously creeping on him.

There is marked defect of inhibition, and any idea presented to the mind is at once translated into action. He interferes with other patients, dictates what they should do, and will probably write a cheque for a million at the request

of any stranger; he is boastful, quarrelsome, and subject to sudden outbursts of violence. These attacks of violence are sometimes extremely serious; the patient has no self-control; he has an inordinate notion of his strength, and may attack those about him with the utmost fury. As he is really in poor health and in bad condition, accidents easily occur.

A peculiar instability of purpose is a noteworthy symptom of this disease. Patients may threaten violence, and positively declare that nothing will make them do what is proposed, and a few minutes later, especially if approached tactfully, will calmly give way as if they had never objected. For instance, a patient may be asked to go for a walk in the garden, but, being busily occupied with some wild scheme, he declines point-blank. If an attempt is made to take him by force, there will probably be sudden violence, and possibly a serious struggle. But if, on the other hand, the patient be left undisturbed a short time, and then asked to explain his scheme outside in the fresh air, he will probably go out without a word. An experienced attendant, who possesses ready wit and tact, can usually manage general paralytics in a remarkably easy manner, and avoid scenes of violence.

Although the majority of cases presenting excitement are of the kind described above, it must be remembered that the symptoms vary extremely in different cases. The excitement may be more intense, closely resembling acute mania, or there may be considerable mental confusion associated with it. But in almost all cases it will be possible to detect distinct evidence of mental enfeeblement and a tendency to grandiose ideas.

Physical Signs.—Accompanying the mental derangement are a number of physical changes, indicating the progressive nervous degeneration. They generally can be recognized by the physician as soon as the patient comes under observation.

The earliest signs heralding the nervous disease are certain affections of the pupils, and tremors and inco-ordination of the muscles of the tongue and lips. There are also certain altera-

tions in the reflex movements of the limbs, and other muscular defects. The interpretation of these physical signs is a matter of great difficulty, as not one of them can be said to be absolutely characteristic of the disease.

None of these early physical signs have a practical bearing upon nursing, although the alteration in *speech* may be very noticeable. At first certain words are pronounced with difficulty, and the defect may easily be overlooked; but later there is a very characteristic hesitation and drawl, which can hardly be mistaken when once heard. In testing the speech, it is usual to select words which are naturally somewhat difficult to pronounce, such as 'conflagration,' 'artillery,' 'biblical commentator,' in which the patient is found to misplace the consonants or omit syllables so that the word is slurred. The *handwriting* also suffers through the patient's inability properly to co-ordinate the muscles concerned in writing.

Following upon these nervous symptoms are affections of the *gait*, a tendency to stumble or trip up over anything in the way, and also difficulty in respect to the passing of water, leading to *retention of urine*. The symptom sometimes occurs quite early in the course of the disease, and, unless the nurse is alive to the possibility, there is danger from the rupture of an over-distended bladder.

In some cases there are symptoms of disease of the spinal cord (locomotor ataxy), which may precede the development of the general paralysis.

Remissions.—The stage of excitement lasts a varying length of time—on an average, about twelve months. Sometimes it subsides rapidly, and the patient begins to improve for a time, both mentally and bodily. The remissions may be so complete that he may be able to return to his friends, and remain wonderfully better for weeks, months, or in some rare cases for years. It will, however, be found that the physical signs of the disease do not disappear, although they also may improve for a time; and a certain amount of mental enfeeblement usually persists. During the remissions patients often

gain flesh and look wonderfully better, and it is not surprising that relatives entertain hopes of complete recovery. But after an interval of uncertain duration these hopes are disappointed, the symptoms reappear, and the paralysis develops with greater rapidity.

In a very few exceptional cases the remissions are indefinitely prolonged, and the patient remains in a state of partial mental enfeeblement. Broadly speaking, however, there is no hope of recovery, and, in spite of all that the physician and nurse can do, a fatal issue is inevitable.

Second Stage.—The second stage is frequently marked by the first fit, but in some cases the first stage insensibly passes into the second. Often the fit is preceded by a period of congestion, the face being red and the pulse full and bounding.

Fits.—The seizures in general paralysis may be indistinguishable from epileptic fits, but generally they are spread over a longer period, and the convulsions are less severe.

During the fit the patient is unconscious, and there are marked convulsions, one side being usually more affected than the other. The convulsions rarely cease definitely, as in epilepsy, but as a rule some twitching of the muscles, or one-sided convulsion, lasts for a considerable time, and possibly, after a short interval, the fits are resumed. In this way a patient may have many hundred attacks consecutively. Sometimes the patient dies in the fit, but more commonly, after a series lasting perhaps twenty-four hours, the fits cease of their own accord. After the fits there is often marked weakness of the muscles affected, but in a few days this usually passes off.

Congestive Attacks.—In addition to definite fits, general paralytics are subject to attacks of loss of consciousness without any convulsions. These are called 'congestive attacks.' Previous to these the patient is dull and stupid for a few hours; he is unable to take notice of things around, and his face may be flushed. Suddenly he is unconscious, and for a period of from some minutes to an hour or more lies in a helpless, lethargic condition, which slowly passes off.

Febrile Attacks.—General paralytics are subject to attacks of fever, which frequently precede a congestive attack or fit. A sudden rise of temperature is often the earliest sign of impending trouble.

During the second stage the mental weakness becomes more manifest, the delusions continue, there is increasing weakness of the limbs, locomotion becomes unsteady, and there are signs of difficulty in passing water. The physical signs already mentioned are more distinct, the disorder of speech is now obvious to everyone, and the handwriting has greatly deteriorated and may be illegible. The gait becomes unsteady, and the patient soon requires assistance in walking.

Patients, however, often gain flesh during the second stage, and become apathetic and stupid. The course of the disease is usually variable, and there is frequently improvement for a time, when another fit occurs, or series of fits, after which the patient is found to have greatly deteriorated. The progress downhill is usually undulating; for a time, perhaps, there is a slight rise in mental and bodily vigour, but this is followed by a rapid decline until the third stage of the disease is reached.

Third Stage.—The patient is said to be in the third stage when he is entirely bed-ridden. By this time the mind has become extremely enfeebled, and little or no interest can be taken in anything. This stage continues in some cases until there is no sign of intelligence whatever, and the mind is in a state of utter vacuity. At the same time the muscular power progressively diminishes. There is wasting; often there is contracture of the limbs, so that the patient lies curled up in bed, unable to move hand or foot. During the third stage the evacuations are passed involuntarily; the urine dribbles away continuously; and unless the greatest care be taken, bed-sores will form.

Death.—Death in general paralysis may occur in the course of the fits, or from pneumonia, bronchitis, diarrhœa, or some intercurrent disease; or it may be due to the disease in the

brain extending to the nervous centres which control the vital functions, so that the heart fails or respiration ceases, or the temperature rises to a point incompatible with life.

Such is the course of general paralysis in its most typical form; but it must be remembered that the destruction of nervous tissue does not always begin in the same areas of the brain; and its course varies in different cases, so that an immense variety of symptoms may occur.

2. **General Paralysis with Symptoms of Depression.**—In some cases, about a fifth of the whole number under care, instead of excitement and delusions of grandeur, there is depression, resistiveness, delusions of unworthiness, or other depressed ideas. These may be extreme in character. There are often hypochondriacal ideas associated with great irritability. In some cases there are definite delusions of persecution, and the patient bitterly complains of his detention and treatment. In other respects the disease runs a similar course to that already described, except that it is usually more protracted, and remissions less frequently occur.

3. **General Paralysis without Excitement or Depression.**—Cases of general paralysis occur which show no marked emotional disturbance, but which from the first exhibit mental enfeeblement.

In these cases the patient is at first tired, easily fatigued, apathetic, dull, and unable to do his work. After an interval a fit calls attention to the nature of the disease.

Many such patients are not placed under legal care in asylums, as the mental symptoms are not troublesome, and the patient can be nursed at home.

The physical signs and progressive decline are similar to those occurring in the types already mentioned.

Nursing and Management.—Only a few special points will be mentioned here.

1. *Violence.*—General paralytics in the early stage are often difficult to control, and may be very violent. In no class of patients are injuries more liable to occur. If the use of force

cannot possibly be avoided, ample assistance must be at hand (p. 325).

2. *Quarrelsomeness.*—Careful supervision is needed to prevent them from quarrelling with other patients, which is readily provoked by their dictatorial, extravagant conversation.

3. *Liability to Fits.*—Constant observation is necessary lest a fit should occur when the patient is unattended.

4. *Fragile Bones.*—The bones in some cases become extremely fragile, owing to the altered nutrition. Hence, in lifting or handling a patient the utmost care must be used.

5. *Retention of Urine.*—This is common, and may occur quite early in the disease. The nurse should always know when urine was last voided, and if it is unduly retained, special report should be made. The fact that urine is dribbling away constantly is no safeguard; it may be the overflow of a distended bladder.

6. The *Bowels* also are apt to get overloaded, and enemata may be necessary.

7. *Choking.*—General paralytics are often greedy. They frequently swallow with difficulty, hence the greatest care must be taken in giving food.

8. *Bed-sores* have already been mentioned. It is generally desirable to get general paralytics up for as long as possible; the change from a horizontal position greatly lessens the risks of bed-sores.

9. *Fever.*—Watch for unexpected rises of temperature.

INSANITY FROM DEFINITE BRAIN LESIONS.

Organic Dementia.

Under this head are grouped together all the cases of mental disorder which are produced by definite localized disease of the brain. The symptoms naturally vary greatly according to the site of the disease and its nature, but, generally speaking, mental enfeeblement is the most prominent. As this arises from distinct organic disease, the term *organic dementia* is sometimes used.

The following are some of the morbid conditions which frequently lead to mental symptoms :

1. *Tumours* of the brain : new growths, syphilitic or tubercular deposits, abscesses.
2. *Diseases interfering with the blood-supply* to the brain :
   (*a*) Blocking of an artery by a clot of blood carried by the circulation to the brain (embolism).
   (*b*) Blocking of an artery by a clot of blood deposited on the wall of the artery (thrombosis).
   (*c*) Disease of the bloodvessels affecting their elasticity, and produced by degenerative changes in the walls (atheroma).
3. *Hæmorrhage* from rupture of a bloodvessel within the brain (apoplexy).

The above are only some of the diseased states which may produce mental symptoms, and it will be readily understood that almost any part of the nervous system may be affected at the same time, so that the signs of disease may be extremely varied. As to the nervous symptoms themselves, paralysis, loss of sensation, convulsions, etc., it is unnecessary to say anything here. In most cases of insanity arising in this way, there is no difficulty in recognizing the main fact, that the mental symptoms are but secondary to the damage done to the brain by the original disease. It may, however, be mentioned that repair of nervous tissue after injury is very slow, and that in many cases no repair is possible, especially when nerve cells have been destroyed. When the injury is due to pressure only, such as from the effusion of blood which is subsequently absorbed, an unexpected amount of recovery sometimes takes place. In a few cases some other part of the brain seems to take over the work of injured nerve cells to a limited extent. It thus happens in certain cases there is considerable improvement of mental symptoms after definite cerebral injury.

The symptoms produced by lesions of the brain are neither uniform nor constant, but in the great majority of cases there is decided mental enfeeblement. This is often accompanied by emotional instability; the patient is easily moved to tears, is fretful, irritable, suddenly passionate, and generally somewhat childish. The memory is also affected, chiefly as regards recent events. Generally there is mental dullness, with a slow intake of ideas and an exceedingly slow response to questions. The whole mental faculties are clouded, and little interest is taken in passing events.

In one group of cases, more particularly those with arterial degeneration, the mental symptoms are slowly progressive; at

the same time the general health fails, and there is a steady decline of strength. Such patients are usually over fifty-five years of age. The loss of memory becomes extreme, congestive attacks like those in general paralysis may occur, the dementia increases, and the case slowly proceeds to a fatal issue.

INSANITY FROM EPILEPSY.

The nervous disease, epilepsy, will be described later on, and it is now only proposed to deal with the mental disturbances that arise in connection with epilepsy.

The subject will be considered under two heads: (1) The permanent mental disorders; (2) the temporary mental disturbances (associated with the fits in certain cases).

Permanent Mental Disorder.—In the majority of cases of epilepsy, when the fits are infrequent, there is no mental disturbance. A great many celebrated men have been epileptics —*e.g.*, Cæsar, Napoleon. On the other hand, when the fits are frequent, there is a tendency towards a slow deterioration of character, which in many cases reaches extreme dementia. This occurs quite as often when the fits are of the minor variety (*petit mal*) as when they are severe convulsive seizures It is probable that the changes in the mental state arise from the same unknown cause as that producing the fits, and are not merely secondary to the convulsions.

Insane epileptics present several characteristic features, so that it is frequently possible to recognize the nature of the case without knowing the patient is an epileptic. They are generally morose and irritable, sometimes apathetic and liable to sudden bursts of unreasoning anger; they are unreliable, and very apt to make false accusations; many are mean and underhand, cunning, and deceitful. They are often cruel, and will impose upon or maltreat other patients. This perversion of character is associated with some impairment of memory and defective judgment. These slowly increase until marked dementia is established.

In many cases there is emotional disturbance, with periods of exaltation and excitement, followed by depression and gloom. A peculiar ostentatious religious fervour is commonly exhibited by insane epileptics; they are fond of reading the Bible and attending religious meetings, but in the majority of cases their conduct and morality do not correspond to their profession. Many cases of epileptic insanity, however, do not present unpleasant symptoms, but are demented and easy to manage, excepting, perhaps, when a series of fits may be impending.

Temporary Mental Disturbances usually occur in connection with a fit, either before or after it. In some cases, however, the fit is apparently replaced by mental disturbance, and it may be difficult to be sure whether this is really epileptic in character. In all cases of sudden paroxysmal violence it is of great importance that the patient should be closely observed, so that any attacks of 'petit mal' should, if possible, be noted.

The mental changes which accompany fits may constitute the only insanity for which the patient is kept in the asylum. When the mental changes *precede* the fits, patients generally 'work up' towards the fit for a few days, becoming more irritable, or excited, or impulsive, or sullen, or stupid, each one according to his special habit, as the time for the fit approaches, so that the nurse knows pretty well when to expect it. The commonest form is an increasing irritability of temper with a tendency to sudden violence. In a few cases the fit is so slight as to escape notice, or perhaps none at all occurs; but the attack may culminate in an outburst of explosive impulse, in which a brutal, unreasoning, ferocious assault, or even murder, may be committed. Such a state is named 'masked epilepsy.' Generally the fit or outburst clears the air, and the patient at once regains his sanest phase. In those cases where the mental changes occur *after* the fit, the same alterations of character may take place, but in the reverse order.

If fits succeed one another so rapidly as to be almost or quite

continuous, the *status epilepticus* is present, and the nervous exhaustion may be so profound as to endanger life. It should be noted, however, that some patients may have an enormous number of fits with apparently little ill effect; as many as six to ten per night for years on end have been noted.

In connection with epileptic fits, a great variety of mental symptoms may occur. Paroxysmal mania, depression with suicidal impulses, and the stuporous state which naturally terminates the fit, may be prolonged or may pass into a dreamy confused condition which may last for hours. There are, however, two mental changes seen in connection with fits which require special notice. The one is *automatism*, where complicated actions are performed during unconsciousness. Generally, this state follows the fit without distinct interval, and the act tends to be a rather habitual one, such as undressing, and to be repeated each time in much the same way. This has been already described (p. 247). The second change to which patients are subject after fits is more common, and more important to asylum nurses: it is *delirium*. This tends to appear from twenty-four to thirty-six hours after a fit, and a period of comparative sanity is generally interposed. This delirium differs in no way from that seen in other diseases, except that it is characterized by extreme homicidal violence. The same delusions as in other forms of delirium are present, with excitement, hallucinations, rise of temperature, refusal of food, and subsequent exhaustion. Suicidal impulse is not very common, but when present causes much anxiety. The delirium may be prolonged, and end fatally, but commonly it gradually passes off in a week or so.

Nursing and Management.—The special points to be observed in the nursing and care of epilepties are mentioned on p. 356. In the first place, it is necessary to emphasize the fact that, although epileptic patients may tell falsehoods, or steal and deny the theft, this may be done unwittingly. It must not be forgotten that many epilepties do things which they cannot remember having done. Their irritable, impul-

sive character renders it exceedingly important that they should be judiciously and tactfully managed. Putting a patient to bed after a fit, and giving him the chance of a few hours' quiet sleep, will often prevent an attack of excitement from developing.

The utmost care in relation to dangerous articles must be exercised, while the possibility of quarrels with other patients, leading perhaps to sudden violence, can only be prevented by unwearied vigilance on the part of the nurse.

INSANITY FROM ALCOHOL.

It is not surprising that a substance which produces striking mental symptoms in individuals who take a single large dose should produce definite insanity when taken in excessive quantities for a long period. Owing to the drinking habits of so many of our countrymen, insanity due to alcohol is, unfortunately, very common.

During the five years ending with 1906, in England and Wales 22 per cent. of the men, and 8·9 per cent. of the women, admitted into asylums were stated to have been intemperate. In considering the question how much mental disease is caused by alcohol, a common fallacy has to be guarded against. It not rarely happens that a person takes to drink because he is mentally unstable. A great number of alcoholic patients have a bad family history and are born with defective self-control, and are also peculiarly susceptible to the action of alcohol. In many other cases patients drink as a direct result of the mental disorder. This often happens in general paralysis, when the loss of judgment and self-restraint due to the disease leads to intemperance. It also happens in mania, and some depressed patients attempt to get relief from their misery by indulgence in alcohol. In this way it is easy to make the mistake of concluding that the intemperance causes the mental trouble, whereas the contrary is possibly the case. However this may be, there is no doubt that alcoholic excess is responsible for the production of a vast amount of insanity; it is probably the most common single cause, although usually associated with some other predisposing condition, such as hereditary instability.

It is important to remember that the effects produced are extremely varied, and that individuals differ greatly in their susceptibility to alcohol. Some old topers seem little the worse for habitual indulgence; in others, disease of the stomach, liver, and kidneys, is produced. Again in other cases the consequences of chronic alcoholic poisoning are seen in disease of the peripheral

nerves, leading to paralytic symptoms ; whilst in those with which we are concerned the brain is attacked, with resulting mental disturbance. In like manner the effect upon the brain is extremely varied ; some few individuals are rendered temporarily insane with quite small quantities, but more commonly definite mental symptoms do not appear until long-continued habitual indulgence has produced degenerative changes in the brain.

The nature of the mental disease produced by alcohol varies greatly, and almost any of the states of insanity previously described may be found in cases in which alcoholic intemperance has been the principal assigned cause. It will be convenient to describe these under two headings :—those arising acutely, and those cases which are chronic in character. Two forms of acute mental disturbance require description.

Transient Alcoholic Mania.—This is a condition of sudden frenzy occurring in connection with a drunken bout, arising before the effects of the alcohol have passed off. As a rule there is partial loss of consciousness, and the patient suddenly becomes violent, wrecks the home, brutally assaults his wife, or commits suicide. In some cases hallucinations prompt the deed of violence. The excitement rarely lasts long, and next day little or nothing can be remembered of it. A large proportion of the murders and suicides daily reported in the newspapers occur in the course of transient alcoholic mania.

Alcoholic Delirium (Delirium Tremens).—In most cases, some illness or accident occurring in a person who drinks excessively is the immediate cause of alcoholic delirium. The symptoms are those of delirium already described. The following special features are found in most cases : A fine tremor of the hands, which may also be seen in the muscles of the face ; hallucinations of an unpleasant nature, usually visual, consisting of rats, vermin, devils, and horrors of all kinds ; marked sleeplessness, and a tendency towards sudden, impulsive acts of almost any kind. The patient's general condition is serious, the pulse rapid, feeble, and often irregular, food is usually refused, the tongue is thickly furred, and sordes collect on the lips.

Delirium tremens involves grave danger to life in old or feeble subjects, or those suffering from pneumonia or other disease. In favourable cases, the symptoms subside in a few days, and recovery is usually complete. In the most serious cases, the patient lies helplessly in bed, with a muttering delirium, picking at the bed-clothes, and entirely sleepless.

Chronic Alcoholic Insanity.—The alcoholic insanity met with in asylums usually arises out of a state receiving the name *chronic alcoholism*. This condition is produced by habitual intemperance, in which a further quantity of spirits or other alcoholic beverage is taken before the effects of the former one have passed off. This habit is only too easily acquired. Chronic alcoholism is accompanied by a certain amount of mental deterioration, slackness and infirmity of purpose; the condition may continue for years before any definite mental disease is developed. It not rarely happens that, previous to the actual onset of mental disorder, the patient may have abstained for some weeks, and that some other factor —family trouble, business anxiety, or bodily illness—may appear to be the immediate cause of the breakdown.

The forms of mental disorder arising in persons habitually intemperate are numerous. They are not distinctive, so that it is not possible, in the majority of cases, to recognize the alcoholic element from the symptoms presented.

Alcoholic cases may present all kinds of **delusions**, and only one or two special features need to be mentioned. Hallucinations of hearing are especially common, and they may be of an imperious character, prompting impulsive acts, which may be either suicidal or homicidal. Delusions of suspicion and persecution of all kinds are also common, and may be re-inforced by hallucinations in harmony with them. Alcoholic patients are in consequence among the most uncertain and dangerous patients under care in asylums. Delusions of unfaithfulness of wife or husband are particularly frequent.

Many recover under treatment, but more often these cases pass into dementia.

In other cases there is marked **confusion**, with impairment of consciousness. The patient is in a dazed, dreamy state, and unable to recognize persons and things around. Disorientation

is often complete. Hallucinations are common, and also impulsive, aimless acts. Complete recovery sometimes occurs, and afterwards little or nothing can be recollected of the illness.

A peculiar *disorder of memory*, accompanied by an inability to speak the truth, which is found in certain alcoholic patients, has already been mentioned. In these cases there are often paralytic symptoms, due to disease of the nerve trunks (neuritis).

Mental enfeeblement due to alcohol may be a development of the partial enfeeblement occurring in chronic alcoholism; more commonly it follows some acute mental disturbance. The dementia is rarely of low grade, and many patients are useful asylum workers, so long as alcohol is withheld.

A large number of symptoms of bodily disease are common in alcoholic patients, only one of which need be mentioned here. This is a tendency to epileptiform convulsions, frequently met with in alcoholic patients advanced in years. It is usually associated with disease of the cerebral vessels, and the fits are not true epileptic seizures.

The *nursing* of alcoholic cases requires little special description. In acute cases it must be remembered that in all probability too little food has been taken for a long time. Hence careful feeding at frequent intervals is very important. Alcoholic patients usually require most careful supervision on account of their impulsive tendencies.

INSANITY CONNECTED WITH CHILDBIRTH.

The insanity connected with childbirth usually falls under three heads—those of pregnancy, the puerperium (confinement), and lactation (suckling).

Hereditary influence can be traced in about one-third of such cases. Childbirth is often the first severe strain to which the average woman is submitted, and consequently a breakdown at this period is common.

Pregnancy Cases.—The mechanical disturbance to the mother's organism caused by the presence of the fœtus is the exciting cause. It occurs rather more frequently when the child is a boy, doubtless because he is somewhat heavier and larger. The most common form is depression with gloomy delusions. If the depression appears in the second or third month of pregnancy, recovery often occurs before confinement; but if later than the middle of pregnancy, not till delivery, and it may be some considerable time after.

Puerperal Insanity.—Insanity results in at least 1 case in 700 confinements, and accounts for about 13 per cent. of female admissions.

Puerperal insanity is now generally recognized to be due to bacterial absorption. It usually appears in one of the following forms:—

(*a*) Delirium occurs at the outset in nearly half the cases, and is probably actually much commoner than this; for many patients recover in a few days at home, and are never certified. This state does not often last longer than a fortnight. If not followed by early recovery, melancholia or acute mania follows.

(*b*) Melancholia may be merely a continuation of depression which existed before the confinement. It is the commonest established type of the disorder, including nearly two-thirds of all puerperal cases. It is accompanied by the usual symptoms of delusion, hallucination, suicidal propensity, etc.

(*c*) Acute mania issues from delirium in about one-third of the cases, and resembles other cases of acute mania, with one or two more prominent features. As a rule the onset is sudden, the patient becoming sleepless, restless and suspicious. She shows marked indifference and antipathy to the friends who are about her, and also to her child, and here lies danger. She may kill the child, and therefore the infant must be taken from her at once. The patient frequently evinces erotic tendencies and a disposition to indecent exposure. Accompanying the mental symptoms there may be considerable physical weakness. Like depression, a usual

period for its duration is five to eight months. In mania lasting over a year the outlook begins to be unfavourable; over two years it is practically hopeless, whereas recoveries occur from depression after four or five years. Puerperal insanity occurs more often at the first confinement, no doubt because the longer labour makes septic accidents easier of occurrence. At least three out of four cases recover.

(*d*) In a number of cases confusion, so common in toxic insanities, is a marked feature. This tends to pass into stupor which, unless it is very deep or prolonged, does not seem unfavourably to influence recovery.

Lactational Cases.—The usual line between puerperal and lactational cases is drawn at the sixth week after confinement, on the ground that the uterus by this time has resumed its normal non-pregnant condition. The usual cause assigned is exhaustion caused by the continual flow of milk. Lactational insanity, like puerperal, is one of the acute insanities. The majority of the cases are of the depressed type; stupor and delirium occur, but are much less common. The average age is higher than among puerperals, and the disease is commoner in later pregnancies. Convalescence is apt to be tedious, but the recovery rate is even higher than the puerperal—viz., about 85 per cent. The delusions in late lactational insanity are apt to be specially gloomy and urgent, and most cases of infanticide occur from this cause.

Labour in the Insane.—Labour in the insane tends to be precipitate, and the first stage unrecognized, both on account of the laxity of the tissues and the diminution of ordinary sensation which accompanies many mental disorders. The second stage is occasionally completed in a few pains, or, indeed, in a single pain, so that the nurse requires to show care and vigilance, and be on the look-out for any suspicious mental alteration or attitude which may indicate uneasy feelings in the patient, in order that she may be put to bed. Careful watch must be kept for the rupture of the membranes. After birth the child should be at once removed from the mother, for her indifference to it may pass into active hostility. If the discharges are foul, there is probably septic infection, in which case there will also be a rise of temperature. Copious and very hot douches (115°-120°) are frequently prescribed. Two a

day are required at first, dropping to one a day or two a week as the temperature falls. The breasts require to be carefully and completely emptied, and firmly strapped to prevent refilling. If a hard spot remain, it means that a duct of one lobule is blocked by inflammation, and the attention of the medical officer must be directed to it at once, lest an abscess form. These abscesses are apt to come on insidiously, and render the breast useless for the future. They are always septic.

INSANITY DURING ADOLESCENCE.

The adolescent period is a critical time, as it is then that the individual is first seriously tested as to his fitness to discharge the responsibilities of life. During childhood he has been under the care and protection of parents or guardians, but as youth and early manhood are reached new problems demand solution; hopes and ambitions spring into the mind, and many dangers and difficulties arise. At this time questions of self-control become important—self-restraint in respect to habits, self-mastery in respect to morals. But it is also during adolescence that inherited mental instability most commonly appears, and it is therefore not surprising that at this critical period of life many persons, especially those with unstable or imperfectly developed nervous organizations, should break down mentally.

The forms of insanity appearing during adolescence are numerous. The following are the most important:

1. Mania. When appearing early in life, it is apt to become recurrent.
2. Melancholia. Recurrence later in life is common.
3. Progressive delusional insanity, which usually begins in early manhood.
4. Insanity from epilepsy.
5. Premature dementia.

All but the last-named have already been described.

Premature Dementia. — Premature dementia (sometimes called 'dementia præcox') is a form of progressive mental enfeeblement which commences during adolescence and before

the brain is fully developed, and is characterized by apathy, indifference, and loss of interest in the affairs of life. It usually terminates in extreme dementia. There is at no time any serious impairment of the bodily health.

As a general rule, patients suffering from this form of adoleseent insanity have not been backward at school—some have been exeeptionally brilliant; on the other hand, others are reported to have been moody, solitary, and disinclined to join in games. The onset is usually slow and insidious. At first there may only be an unusual indolence, a tendeney to stay in bed until late in the morning, and a loss of interest in old pursuits. More rarely the onset is somewhat sudden, with an attaek of excitement or altogether unexpected and unreasonable depression.

The most striking symptom as the disease develops is an emotional indifferenee, with carelessness and inattention to duty or pleasure. The power of conneeted thought seems largely lost; at any rate, little mental effort is displayed. The patient beeomes untidy in dress, and the personal habits are faulty. The remonstranees of friends are unheeded, and there is a marked loss of natural affeetion. Early in the ease hallucinations and delusions frequently appear. They are usually of an absurd character, and have no relation to the general state of the mind. The delusions in particular may be very silly; thus, a well-edueated girl suddenly spoke of the 'holy viper,' and could not say what she meant. In some cases there may be terrifying hallueinations, and sudden impulsive violence may oeeur. Both hallueinations and delusions are rarely persistent, and as the disease progresses they usually disappear altogether.

Another eommon symptom is the tendeney to mannerisms of all kinds: peeuliar movements of the limbs, strange attitudes, grimaces, and often senseless explosions of laughter.

Although the patient presents many symptoms of mental disorder, it is noteworthy that there is rarely any serious disorder of conseiousness; on oeeasion he ean eorrectly reply to

questions, knows the names of those about him, and understands what has happened. It is remarkable that not a few patients, apparently stupid and fatuous, will now and then pass an acute remark, or give a shrewd reply to a question, and even write an excellent letter. As a rule, however, the letters begin fairly well and then wander off into the most hopeless nonsense, containing much repetition.

As a general rule, nutrition is well maintained, but many patients are pale and unhealthy-looking; their circulation is poor and their hands blue with capillary congestion. Excessive secretion of saliva, which tends to dribble constantly from the mouth, is not uncommon. There are often ill-defined nervous symptoms, alterations of the reflexes, and peculiarities in gait. None of these symptoms, however, are constant.

The course of premature dementia is variable. Remissions commonly occur, and sometimes they are sufficiently complete to permit the patient to return to his friends. Almost without exception improvement is but temporary, and after a few weeks or months the symptoms reappear, and the progress towards dementia is resumed. A profound state of dementia is reached after several years. A large number of the incurable patients in our asylums are cases of this disease. As a rule, the dementia is of low grade; in only too many cases the patients are unable to occupy themselves usefully; they are habitually faulty in their habits, and from a nurse's point of view altogether unpromising. Their apathy and indifference to external influences continue, and they can rarely be taught to help in the simplest kind of ward work.

A number of different forms of premature dementia have been described by authors. Only one of these requires special mention. This (the *catatonic* form) tends to be more active than the ordinary type, and terminates sooner in dementia. States of stupor and excitement occur at intervals. The former is marked by extreme muscular resistance, strained cataleptic attitudes, and refusal of food; often senseless repetition of words, phrases, or questions: the latter, by curious actions, sudden impulses, not inspired by delusions, which may be suicidal or homicidal; also the peculiar gait and stereotyped movements. Many of these peculiarities have already

been described under Disorders of Volition (p. 248). The course is extremely irregular and uncertain, but during the whole time the leading symptoms, emotional indifference, apathy, and loss of natural affection continue, and progress towards dementia is accelerated if the (catatonic) symptoms are severe.

It is claimed by some authors that dementia præcox is a definite disease, but authorities are not agreed. It will be sufficient here to say that in every asylum there will be found many patients closely resembling the above description.

INSANITY OF OLD AGE (SENILE INSANITY).

As years increase, and old age approaches, numerous physical and mental changes occur in the ordinary course of nature. The wrinkled skin, shrunken figure, declining strength, slowness of movement, and the tendency to unsteadiness of the limbs, are accompanied by lack of attention, failure of memory, and an inability to take in new ideas. The mind dwells in the past; incidents that happened long ago are well remembered, but recent events tend to be forgotten. In extreme old age it is but natural that current events make little impression. When old memories are awakened, however, there is a quickening of intelligence: the eye lights up at the thought of past scenes of excitement, the body is more erect, and the stories of bygone days are rehearsed and emphasized with active gestures. The failure of memory frequently causes constant repetition and garrulousness, whilst in many cases errors of time and place creep into the story, so that it becomes quite untrustworthy.

It is not possible to draw any definite line between these natural failings of advancing years and insanity due to senile decay. In many aged people important events cannot be remembered; they may forget where their papers are kept, how their money is invested, what their income is, and yet, when reminded, the facts may come back clearly enough. On account of this inability to look after themselves and attend to their personal wants, many aged persons require assistance, and not infrequently nurses are engaged for the purpose. It should be remembered that in such cases the nurse's position

is one of considerable responsibility, as she may have great influence over her patient. A word of warning is here necessary. Relatives may ask the nurse to assist them in getting the patient to transact business, sign cheques, deeds, or other documents; and though this may be perfectly right and proper, it is desirable that the nurse should take no part in such matters, and in no way become mixed up with the patient's private affairs.

In other cases the mental changes due to old age are much more pronounced, so that special care is needed, and about 8 per cent. of the patients admitted into asylums suffer from some form of senile insanity.

These forms are extremely varied in type, and states of excitement, depression, and confusion all occur. Melancholia with delusions of destitution or persecution is especially common. Some of these cases recover in a remarkable way, but more frequently the depression continues until the end. Mania, with excitement, shouting, especially at night, is also common in senile cases. Sometimes loss of self-control is manifest from obscene conversation and behaviour, resulting in the painful spectacle of an aged man, with a blameless and honourable record, becoming lost to all sense of decency. In some of these cases there may be local irritation from disease of the bladder or sexual organs. Another type of case is extremely dull and apathetic, and easily induced to do anything suggested.

Progressive senile dementia is common, and it is not easy to distinguish this from the usual signs of old age, except that the mental enfeeblement becomes gradually more extreme. In senile cases loss of memory is one of the most prominent symptoms. Intervals of time are misjudged and the surroundings are not recognized. Sometimes the disorientation is almost complete, but, as a rule, this and the failure of memory is uncertain and uneven; at one time all is forgotten, and at another flashes of recollection brighten up the whole mental outlook. As in senile decay, events that have

happened long ago are remembered better than recent ones, but besides this, erroneous reminiscence is common. All kinds of false beliefs may be entertained, but there are rarely any fixed delusions.

Besides the failure of memory, there is often deficient judgment and self-restraint. Sudden unreasoning anger, great irritability and querulousness, uncalled-for passionate weeping, as well as a childish elation at trifling incidents, all occur in the course of senile decay.

The *nursing* of senile insanity calls for little special remark. Patients are often worse at night, and sleeplessness is a common symptom, accompanied by restlessness, so that, if left alone, they are apt to get out of bed and hammer at the door until attended to. This tendency to excitement at night can generally be lessened if there be continuous supervision by a night-nurse. Hot milk given during the night often assists in lessening excitement and producing sleep. Many such patients sleep better in company with others and in a lighted room.

It must be remembered that old people require a great deal of rest, and when insane they are apt to exhaust themselves. Moreover, they are very frail, and fractures occur from trivial causes.

Few cases are more responsive to careful nursing than those advanced in years. Although recovery may not be possible, skilled, tactful management goes a long way towards calming excitement and relieving fears, and a great many cases, when placed under care, rapidly become quiet and contented. Senile patients may be quite unable to say where they are or know the names of those about them, yet such cases are, as a rule, very grateful for attention, and speak appreciatively of the care they receive.

IDIOCY AND OTHER FORMS OF CONGENITAL MENTAL DEFECT

Under this heading are placed those who have never reached the adult stage of intelligence (see p. 215). There is no definite boundary-line between these classes, but all grade insensibly into one another. Regarded as the subjects of asylum nursing, we have

to consider imbeciles and idiots somewhat further, backward children and feeble-minded persons being found either at home or in special schools. It is clear that a brain may become defective through failure of the inherent power of growing, or may cease to grow through absence of some special nutritive substance present in normal blood or tissues, or, lastly, after being originally healthy, may be nipped at some period of its growth by accident or disease.

Genetous is the term applied to those who fall behind through failure of developmental power. They form the largest group of all, and one out of which, as knowledge of the conditions of brain-growth increases, other groups are carved, which is much the same as saying that up to the present we know little or nothing of the cause of congenital mental deficiency in the majority of cases. Genetous idiots may be well formed physically, but in many there appear certain 'throw-back' features, called stigmata of degeneration (see p. 249). Defective muscular co-ordination is common, and may extend to the muscles of articulation, so that the speech is affected. There is also a tendency to weak circulation, with blue and cold hands and feet, from defective development of heart and bloodvessels. The physical defects and appearance bear no definite relation to the amount of mental under-development; in fact, some who look most unpromising learn fairly readily, and the handsome children are often the most hopeless.

Cretins are produced by deficiency of thyroid gland secretion. They are of stunted growth, with bowed legs, large abdomen, narrow chest, and spade-like hands. The hair is coarse and dry, and the skin pale, thickened, and tough. The features, too, are coarse, and the tongue large and deeply scarred. Pads of fat are often found at the root of the neck. The development is, as a rule, of low grade, and habits are faulty.

Microcephalics are unmistakable, with their small head, large facial bones, coarse, thick hair, and bird-like nose. They tend to be of small stature. It is commonly said that heads which measure less than 18 inches round always belong to idiots, but in reality there is little direct relation between size of head and brain-power (one lad whose head measured 19 inches, and who was 6 feet tall, was a useful and fairly intelligent ward worker).

Mongolians, or 'Kalmucks,' possess striking family resemblances. Mongolian idiots have widely separated and obliquely placed eye-slits, rounded ears, depressed nose, large, protruding, and fissured tongue, and stumpy fingers. The name is derived from the supposed resemblance to the Chinese Tartar face.

Paralytic, *inflammatory*, *traumatic*, and various other names are applied to groups where disease or accident stops brain-growth at an early age. The chief causes are injury to the head during prolonged parturition or forceps delivery, disease of bloodvessels of brain, fevers in early childhood, and blows or falls on the head. If the part of the nervous system affected is that supplying the muscles, various weaknesses and deformities may appear, such as hemiplegia, chorea, or limited paralyses.

Deprivative idiots are those who, being deaf-mutes, and perhaps blind as well, have not been properly educated through the avenues of sensation being cut off. These are now properly treated in the various schools specially organized for the purpose, but there is generally some inherent brain defect beyond the deaf-mutism, for such patients often become permanent inmates of asylums later on in life, being very subject to maniacal attacks, with delusions of persecution. The most hopeful cases are those who have originally normal brains, but whose sight and hearing have been destroyed in infancy, as by small-pox.

Hydrocephalics are those who have suffered from tuberculous meningitis in early life, so that the fluid normally present in the lateral ventricles can no longer escape into the general cerebro-spinal cavity; the brain consequently becomes distended and stretched out very thin just inside the skull, the centre being a large watery sac. Meanwhile, the cranial bones increase in size to correspond with the expanding brain. Needless to say, slight cases of hydrocephalus, although noticeable objects, need have no trace of mental deficiency, but may be highly intellectual.

Almost any imbecile or idiot may happen to be epileptic, and there is no distinct class which can be so labelled. In these cases the fits are to be traced to the same cause which produced the mental deficiency. Genetous and microcephalic idiots are very liable to be epileptic, and of paralytic idiots probably more than half are. It is not uncommon for fits in congenital cases to cease as the child grows older. Epileptic imbeciles are unprofitable subjects for education, for the fits exercise a progressively destructive influence upon mental capacity, and tend to wipe out all the knowledge which has been so laboriously acquired.

Management of Congenitally Defective Cases.—The principal lines of treatment to be followed are continual observation, careful classification, and unwearied training. Owing to the prevalence of vicious habits, observation both by night and day is essential, at any rate until the individual characteristics are fully known. The cases should be classified as far as possible according to mental condition; thus, high-grade imbeciles should be kept entirely apart from low-grade idiots. They are extremely imitative, and adopt bad habits far more quickly than good, and one low-grade, vicious patient will speedily corrupt a whole ward of well-behaved ones, and the careful results of laborious training be lost in a few weeks. Much can be done by teaching the patients to be useful in housework, simple needlework, and the more mechanical processes of the various trades. By using the imitative faculty, the most apparently hopeless case can sometimes be taught first to behave and keep himself clean, and later possibly to be of use. The special means of education, intellectual and manual, which are practised in imbecile asylums with good results, go beyond the scope of the ordinary mental nurse's training, and need not be mentioned here.

CHAPTER V

SLEEP AND SLEEPLESSNESS.

It is difficult to overestimate the importance of sleep in maintaining both the mind and the body in a healthy condition.

In all living beings there are two alternating states—activity accompanied by wear and tear of tissue, followed by exhaustion and repose, during which tissues are repaired and the capacity for work is restored. Repair of fatigued muscle takes place to a large extent when the body is at rest; but for the complete restoration of nervous energy more than this is required. During sleep all the activities of the nervous system are reduced to a minimum; ordinary sensations are no longer heeded, and we are unconscious of our surroundings. The nervous mechanism concerned in the maintenance of life—namely, that required for respiration, the circulation of the blood, and the digestion of food—continues to be active, but to an appreciably less extent than in the waking state. The higher centres, those parts of the cerebral convolutions concerned in mental activity, are quiescent during sleep, and it is during this state of rest that the nervous system is able to re-accumulate energy for the working of the morrow. Sleep is in truth 'tired Nature's sweet restorer.'

Sleep is a necessity of life; anyone deprived of it becomes worn and haggard; there is rapid loss of strength and weight, and, if sleep be entirely prevented, death ensues from exhaustion.

The degree of unconsciousness during sleep varies considerably. As a rule, it becomes more and more profound during the first hour, afterwards gradually less deep, until at the usual time for waking, a slight sound or other trivial sensation, which earlier would have been unheeded, is sufficient to arouse the dormant centres of perception; the senses become alert, consciousness returns, and the mind awakes.

During sleep the heart beats somewhat less forcibly and less frequently. The circulation is less rapid, and in particular the blood moves more slowly in the brain; the quantity in the cerebral vessels is diminished, so that the brain is anæmic and in a comparatively bloodless condition. At the same time

respiratory movements are slower, and less carbonic acid gas is eliminated by the lungs. Secretions are diminished in quantity, and the gastric and intestinal movements are less rapid.

Less heat is produced during sleep. In profound sleep the reduction in the output of heat causes a lowering of the temperature of the body, which may fall half a degree or even as much as 2° F. On a very cold night this fact may be proved by experience. The bed-covering may be sufficient to keep the body warm when awake, but not sufficient when sound asleep. Under such circumstances the person wakes up feeling cold, to fall asleep again soon afterwards, when the quickened circulation and more rapid respiration have restored the bodily heat. Unless more bed-clothes are provided this process recurs, and sleep is repeatedly interrupted.

The exact nature of the changes in the brain that occur during sleep are at present unknown. A number of theories have been put forward, but it is unnecessary to explain these; all of them are quite unproven.

The amount of sleep that is necessary varies greatly in different individuals. The infant sleeps through almost the whole interval between meals, and children require much more sleep than adults. As a rule, women need more sleep than men. In old age the duration of sleep at any one time is reduced, but much of the time lost at night is made up by slumber during the day. Very much depends upon habit. Some persons seem to need but little sleep, and cases are on record of eminent men who slept but four or five hours daily, and appeared to remain in good health. Such cases must, however, be considered as altogether exceptional, and the average adult requires seven or eight hours' sleep in order to keep in good health and maintain full efficiency.

A light sleeper will require more sleep than a person blessed with the faculty of sleeping soundly, undisturbed by dreaming.

If there be much dreaming, it is obvious that the brain is

not so completely at rest, and sleep will not be so refreshing. It is, however, well known that a dream dealing with a long sequence of events takes place in a very few moments, usually immediately before waking. Sometimes a vivid dream with many varied experiences occurs during the act of waking. On the other hand, we frequently meet with patients whose sleep is greatly disturbed by terrifying dreams, which, recurring again and again through the night, cause great distress.

There are several morbid variations of sleep as well as morbid changes that may occur during sleep that require attention from the nurse—viz.:

1. Night terrors.
2. Somnambulism.
3. Bodily illnesses occurring during sleep.
4. Excessive sleeping.
5. Defective sleeping and sleeplessness.

1. *Night Terrors.*—Certain young children are subject to night terrors, in which there is a sudden attack of alarm and fear, and for some time the child cannot be pacified. Occasionally in the insane vivid hallucinations produce a similar state of terror, and the patient awakes in a state of the utmost alarm, and may be unable to recognize persons around. These attacks may occur in epileptic subjects.

2. *Somnambulism*, or sleep-walking, is common in children and young adults, but is rarely seen in the insane.

3. *Bodily Illness* occurring during sleep may cause the nurse much anxiety and perplexity. *Nocturnal epilepsy* is extremely common, and the only sign of the fit, if the patient is not under continuous observation, may be wetting the bed. The danger of suffocation during a fit will be mentioned in the chapter dealing with the care of epileptics.

Fatal *syncope* may occur during sleep. The inability to waken the patient and the cessation of the pulse and respiration will quickly indicate the serious change in the patient's state. In the case of *cerebral hæmorrhage* leading to coma, the noisy, stertorous breathing, the flushed face, full, bounding pulse, and the inability to waken the patient, will suffice to distinguish this from ordinary sleep.

4. *Excessive Sleeping* occurs in many imbecile, feeble-minded, and demented patients. It also occurs in certain rare nervous diseases in which the cerebral circulation is interfered with. In these cases the patient can be waked, but in a moment or two falls to sleep again.

5. **Sleeplessness**, or *Insomnia*, is a common and important

symptom of disease. It is also frequently met with in persons apparently in good health, who seem to have acquired the habit of sleeping badly. In the majority of cases the difficulty is not only the inability to obtain a sufficient amount of sleep, but the way in which the mind rehearses past events and worries over difficulties. The fatigued brain cannot rest, and a state of extreme distress is produced. Although it may be true that patients are apt to magnify the injurious effects of the want of sleep and to exaggerate the length of time they have been awake, saying they have heard all the hours strike, when the night-nurse reports some hours of uninterrupted slumber, it always must be kept in mind that any considerable loss of sleep is a serious matter, and means a serious interference with the natural processes of repair and restoration.

Speaking generally, anything which increases the activity of the cerebral circulation tends to produce sleeplessness. On the other hand, anything which tends to lessen the rapidity of the circulation without in any way disturbing the general functions of the body will tend to favour sleep. These alterations in the circulation may depend upon a number of different causes, some acting through the nervous system, such as mental excitement, others, such as heart disease, directly affecting the circulation itself.

We may discuss the various proximate causes of sleeplessness under two heads—viz., those which are external to the body, and those which are internal.

The *external causes* are chiefly unaccustomed or uncomfortable surroundings, but in mentioning these it must not be forgotten that in healthy subjects they are of small importance, and a person who is tired will sleep readily enough, in spite of much discomfort; but with invalids, anything that disturbs ordinary routine tends to produce sleeplessness.

Thus, a strange room, unusual noises, a hard, lumpy mattress, a pillow that is too high or too low, unduly heavy bed-clothes, are some of the things which disturb the sleep in

those unaccustomed to them. A common cause of restless, interrupted sleep is a want of ventilation of the bedroom, producing a sense of oppression; whilst in elderly people or those unable to take exercise, bed-clothes, although abundant, may be insufficient by themselves to maintain bodily heat.

Internal causes are more important and more difficult to remedy. These may be subdivided into physical and mental causes. Alterations in bodily health are common causes of sleeplessness, especially those accompanied by pain. In almost all febrile states there is restlessness and wakefulness, and in many forms of heart disease, and in cases of respiratory disorders, sleeplessness is very distressing.

But minor disturbances of health, such as indigestion or the effect of drugs—*e.g.*, tea, coffee, or tobacco in many persons, and fatigue in mind or body—frequently prevent sleep.

As to *mental causes*, excitement, anxiety, or other mental stress is frequently responsible for sleeplessness.

In some cases, as already mentioned, the insomnia seems to arise from a bad habit of worrying and thinking over the events of the day; but generally some bodily disturbance is the real cause, and but for this the patient would at bedtime have been able to put on one side the troubles of life.

This condition may arise from long-standing neglect of the laws of health, such as late hours, or overwork carried on possibly in spite of fatigue under the stimulus of tea or coffee.

The habit of sleeping, once lost, is difficult to re-establish.

Sleeplessness is frequently a marked symptom of mental disorder. In almost all acute cases patients sleep very badly, and in some of the more serious cases of delirium the patient does not sleep at all, and rapidly becomes so much exhausted that life itself is imperilled. In maniacal excitement the patient sleeps for short periods, but the total amount of sleep is markedly deficient. In melancholia, also, sleeplessness is a most constant and distressing symptom.

It is frequently found that previous to the attack of mental

disorder the patient has been sleepless for a long time, and it is noteworthy that in the majority of cases one of the earliest signs of convalescence is the return of ability to sleep.

Thus, the connection between sleeplessness and mental disease is intimate, and it is of great importance that the nurse should carefully observe and report any disturbance of sleep. Not only should the amount of sleep be noted, but also its character, whether sound or light, continuous or interrupted. By careful observation at the time the nurse may discover some disturbing factor which may throw light upon the cause of the sleeplessness, and materially assist the physician in the treatment of the case.

Treatment and Management.—In the simpler cases not dependent upon definite bodily or mental disease the following simple rules may suffice : A cool, quiet, well-ventilated bedroom, sufficient covering ; an easily digested evening meal, taken not too late ; a quiet, unexciting evening, and a regular bedtime. In certain cases the determination to keep regular hours is frequently rewarded. It is unwise, as a rule, to remain in bed in the morning, although it may be possible then to get some sleep. In some cases a complete alteration in the manner of living is required, but this cannot be carried through without considerable self-denial. It may not be possible whilst at home to break with the accustomed routine, and in such cases a complete change of scene is beneficial.

The nurse's duties in the treatment of the more severe cases of sleeplessness are very important. Good nursing and management are generally of greater value than the administration of drugs. There is scope for much resource on the part of the night-nurse in the application of remedial measures.

The personal influence of the nurse is also an important factor. A nurse who is considerate without being fussy, who anticipates the needs of a patient without asking questions, who possesses a calm demeanour, and goes about the necessary

duties quietly and decidedly, readily obtains the confidence of the patient. This in some cases is half the battle; the patient's mind is set at rest, and the remedies applied are in consequence successful. It is easy to understand that in such a matter anything which irritates, whether it be a noisy foot fall, or the careless slamming of a door, or needless conversation in the patient's presence, may quite prevent any good effect from treatment, however appropriate.

The first concern in the treatment of a case of sleeplessness is the health of the patient. In particular, constipation should be attended to, and in acute cases the possibility of retention of urine should be considered. The nurse should also take the patient's temperature during the night to ascertain whether there is fever, on the one hand, or deficient bodily heat, on the other.

Fresh air and exercise are of the utmost importance. In suitable cases the patient should be out of doors as long as possible, and live the whole day in the open air, if practicable.

Much may be done to encourage sleep by attention to the surroundings. The ventilation of the room is important, the shading of lights, and in general the removal of all disturbing influences. In particular, the bed and bed-clothing must be carefully considered. When there is difficulty in the circulation or a tendency to cold feet, hot-water bottles are an important aid in securing sleep. The majority of persons sleep best alone and in a dark room, but many insane patients can only sleep well in company with others. Not a few, especially those with terrifying delusions or hallucinations, dread the dark, and prefer a dormitory in which a night-nurse is constantly on duty to the privacy of a single room.

Food.—Many persons sleep better if a light meal, such as bread and milk, be taken just before retiring to bed, but more often food is needed most in the early hours of the morning. Patients often sleep fairly well the early part of the night, but waken at 2 or 3 a.m. and fail to sleep again. In such cases a

cup of hot milk with bread-and-butter or a biscuit will often be followed by several hours' sleep. It has been found that a draught of hot water taken on going to bed sometimes assists in promoting sleep, and that this course is open to less objection than the 'night-cap' of spirits so frequently used for the purpose.

In many cases the diet of a patient must be revised and his habits in relation to stimulants entirely changed before sleeplessness can be successfully combated.

Baths.—Hydropathic measures are of considerable service in the treatment of sleeplessness. In cases of extreme irritability the warm or hot bath may be prescribed immediately before bedtime, but in some cases both appear to produce increased restlessness, and then recourse may be had to tepid or cold douches, or cold baths followed by friction. In febrile cases, tepid sponging of the whole body, first the head and neck, then the arms, then the trunk and lower limbs, is of great service, not only in reducing the temperature, but also in soothing the patient and promoting sleep.

Massage.—General massage late in the evening is found to promote sleep in some cases, but in others it appears useless, if not actually a hindrance.

Occasionally partial massage of the limbs, such as firm pressure and kneading in the direction of the venous circulation, is of great service, and this is especially valuable in cases due to fatigue or those in which restlessness is a marked feature. Other special procedures are recommended, such as gentle downward stroking from the occiput to the side of the neck and massage of the neck and upper part of the spinal column.

Deep kneading in the deltoid region is also stated to have a sedative influence. Gentle stroking of the hair or brushing it for a prolonged period in a uniform way is also recommended.

Drugs.—A large number of drugs are used in the treatment of sleeplessness. Some of them are given chiefly to relieve

pain, others are of value in calming excitement, whilst another class, termed 'hypnotics,' are used to produce sleep.

Dangers of Sedatives.—A word of warning in relation to the use of sedatives will not be out of place. Sleep is not merely a state of unconsciousness: it is a period of repair which is a necessary vital process. Many drugs, whilst dulling the mental processes, at the same time diminish this power of regeneration. They all, in addition to their effects upon the nervous system, exert secondary effects upon other parts of the body, especially the processes concerned in nutrition. It is to this diminished power of repair, and to these by-effects, that are to be attributed the lassitude and malaise so often experienced after taking a sleeping draught. Drug habits, moreover, are only too easily established. The downward path is easy, and the return a veritable labour. A patient requires more and more of a drug to obtain the desired effect, until the very dose itself may be a danger. The drug habitué creates for himself a costly unnatural necessity upon which his comfort in life is absolutely dependent. Finally, with every faculty weakened, he sinks into a mental and moral and physical wreck.

SECTION IV

GENERAL CARE AND NURSING OF THE INSANE

INTRODUCTORY.

In this section it is proposed chiefly to describe the general principles and ideas that should guide those to whom the immediate care of the insane is entrusted. Only a few details are discussed, because many are given elsewhere in the Handbook, and others are best learned from the instruction and practice of superior officers. It is easier to master details if the attendant grasps the governing principles from which they originate.

An *asylum* is a complicated machine of many parts, which in the course of years have been slowly worked out and pieced together. It has been designed for some very definite purposes. It is intended both by its structure and through its routine to be, in the first place, a house for the protection of the insane. The very name 'asylum,' chosen to replace the old term of 'madhouse,' signifies a *place of protection*, where people shall be safe from risk of accident, ill-treatment, and plunder. It is important for those entering the asylum service to get this principle deeply fixed in their minds—that a patient comes to the asylum to be protected. It may be that his illness requires that others shall also be protected from him and from his actions; nevertheless, the securing of his safety is the chief function of the asylum.

A second general principle to be grasped is that an inmate

is now called a *patient* instead of a *madman* or *lunatic*, as of old, because it is recognized that he is ill and needs treatment. That idea of him must always be preserved. It is quite easy to forget it when we are looking at one who is strong in bodily health; it is still easier to forget it when a patient is causing plenty of trouble, apparently for no other reason than from a wish to cause trouble. Besides, the idea that a patient is ill is a far better reason to give him for his detention than that he is too troublesome, dangerous, or foolish to be abroad.

The next point is that many patients on admission have a good chance of *recovery* from their illness if properly treated. It is quite easy to spoil that chance by neglect or injudicious management. Then, again, in many cases it is evident from the beginning that there is but small prospect of recovery. Still, there are many degrees of *comfort* and *happiness* to be obtained by proper treatment. It may, indeed, be said that there are very few cases in which benefit of some kind cannot be secured, or which may not be stayed from total degradation.

For these ends something must be done in the way of *treatment* for the patient; it must be done in the right way, and it must be done continuously. On such grounds an asylum becomes a *hospital* in very truth; indeed, in several localities authorities have been wise enough to adopt this title as a standing notice that treatment is a principal object. To some, perhaps, the name of 'hospital' does not appear to be appropriate, because in their minds it is associated with the giving of much medicine, with operations and operating theatres, antiseptics, and so on. Nevertheless, in addition to the ordinary remedies for disordered health, true medicine of a moral nature is given in plenty in the shape of advice and control, though it is difficult to weigh up or measure. The discipline and routine of an asylum may be well compared to the hygiene of the ordinary hospital. They tend to keep in subjection excitement and disorder, which are as harmful to the mental invalid as microbes are to a patient with a wound or sores.

The objects of an asylum have been summarized thus: (1) To promote recovery, when that is possible; (2) to secure due observation and control of the patients; (3) to insure as much comfort as possible. These are precisely the objects of a general hospital or infirmary. In these latter days another point of resemblance between the two classes of hospital has arisen. In each, systematic and scientific observation of disease is carried out, often associated with suitable teaching and training for both doctors and nurses. There is something to be learned about mental disease each day.

There is yet another way of looking at the objects of the asylum. A patient has for his own good to be deprived of two things most dear to him—liberty and independence—and this has to be done in such a soothing and deft manner that resentment, often felt at first, shall eventually pass away and cease to imperil or delay recovery. In cases which cannot recover, personal comfort, and often happiness, may be secured in spite of lost freedom.

Up to a certain point the structure and design of the buildings will help in securing the attainment of these objects. Roomy and bright wards, well warmed, well ventilated, and in good order, are a proper foundation for contentment. Sufficient food, properly served, and suitable clothing, are next in order, while occupation and recreation do much to help. These, however, would be of little avail but for another element, by far the most important of all. However wisely authorities may have planned arrangements, little can come of them without the best services of an earnest nursing staff. The person in charge of a ward (whether attendant, nurse, or sister) is the person on whom the welfare of a patient chiefly depends, and must be dependent in turn on the loyal help of the subordinate officers of the ward. All have the most serious duties and responsibilities to bear under circumstances of much difficulty. It is, of course, not difficult for any ordinary person to face them at the outset, but unless he already has, or is prepared to acquire, certain necessary *moral*

qualifications, he can never hope to succeed, nor, indeed, to continue long in the calling that he has chosen for himself. It is not proposed to discuss among these the ordinary morality, decency, sobriety, and honesty, which are required of all, especially of those who live in close community with other beings. The matters now referred to are mostly known as points of character. They are looked for and quickly recognized by medical officers and head-attendants, who, by the experience gained in judging not a few men and women passing through the service, are soon able to place a correct estimate on moral characteristics. Found active, these lead on to trust and promotion ; if they are weak or absent, there is no hope of improved position or of the acquisition of that respect and goodwill which most desire to receive from their superiors and fellows. They are well known and common, so much so that it might appear waste of time to write of them. Still, the life of an asylum is for most, especially for novices, a life of quick changes, small surprises, and emergencies, often severely taxing the best intentions. It is well at these times to have at hand the support of certain fixed guiding principles. The accurate carrying out of orders and discipline is all-important, but the highest value of an attendant will be found to lie in the degree in which he holds these qualifications—they may well be called virtues. They are :—

Endurance and Cheerfulness.—By the former is meant carrying out one's duty to the end with as much readiness and zeal as marked the commencement of the work, troubles and trials being borne as calmly as may be, without losing heart. These trials are bound to come, and possibly there will also come a sense of tiredness, when novelty of surroundings has passed away and the load of dull routine seems to leave no hope of better things. But others pass through just the same successfully. All ills are less felt when expected, and acquaintance makes them increasingly tolerable. Cheerfulness and an intention to make the best of things are most valuable to the attendant as well as to his patients, for the cheerful man

makes troubles light. A grumbling spirit can only rob asylum life of all interest and pleasure that may exist in it, while assuredly it encourages patients in the same practice, so that a ward becomes a miserable home for all and a reproach to those in charge of it. Steady work and self-improvement in the art of nursing will be found to help and support greatly, by taking the mind off worries.

Firmness.—This is quite essential. An attendant who *does not know his own mind* is a source of trouble, if not of danger, in an asylum. It is necessary first to ascertain what one's strict and full duty is, and then to adhere to it without argument or doubt. When patients, like other folk, understand that under no circumstances whatever will the attendant allow any departure from duty, they will respect and obey him. When, on the contrary, they see that there is vacillation and indecision, they will assuredly begin to take advantage. It has to be remembered that a very considerable proportion of patients are only kept quiet by moral discipline. If that discipline weakens or is withdrawn, disorder will naturally follow. Disquiet in a ward, which is usually peaceable, suggests to the authorities failure on the part of one or more of the attendants to be sufficiently firm. There is not the least need for discipline to be harsh or overbearing; in fact, such discipline defeats its own end. Patients will intuitively rebel against harshness, when in the long-run they will be content to be guided by calm and consistent control.

Self-Control.—This is required in two ways. First as to control of *temper*, which under the many trying circumstances of asylum life is much needed. To lose temper with a patient is wrong in principle, it is foolish, and it is expensive. It is wrong in principle, because the trying conduct of a patient is a symptom of disease. One might as reasonably get angry because a patient has a pain in his head or leg. It is foolish, because the patient may lose his temper too, and answer with his tongue; some patients are quite ready with this weapon,

and can wound most efficiently. There is then nothing further to be done. An appeal to physical force, of course, is not to be thought of for a moment, and the attendant has to retire from the wrangle, unable to claim any advantage, and under the circumstances a draw really means a defeat. It is expensive, because real authority is materially weakened by each exhibition of temper. A calm demeanour, even with the addition of the soft word, is the best checker of rudeness and insult, and affords lasting rebuke to those who can appreciate it. To those whose mental condition forbids appreciation, it can make no difference whether an answer be rough or soft. Protection against those accusations of roughness or harshness, which some patients make with facility, is afforded to the attendant by its being known that he is forbearing.

Then, self-control in thought and action are most desirable in emergencies. Prompt action may be needed, but thought is infinitely quick. There is always a moment for reflection, though novices will at first find it a little difficult to make time for it. But as they get experienced, the right thing to do will suggest itself more quickly and require less consideration.

Honesty of Purpose.—This naturally includes earnestness and the intention to do one's best at all times. For instance, the lunacy laws, the asylum rules, the instructions (written and verbal) of superiors, and the hints in this book, probably cover between them all the duties for which an attendant can be held responsible. Nevertheless, many chances of doing little things for the benefit of a patient occur during the day for the performance of which no one can be thought accountable, except on the score of absolute honesty of purpose. The same applies to the attendant's relations to the asylum. He can go out of his way to save waste, damage, and disrepair of property; to aid others in their work; to help in the smooth working of the institution; and to remove causes of friction. In all these directions carelessness or want of interest are quickly recognized; things seem to be going wrong for no

particular reason, until it is discovered that they can all go right under another officer. *Loyalty* to the institution and to the service is a form of this qualification, as is loyalty to one's colleagues, each one of whom is entitled to the best of aid.

It may be well to point out that in dealing with many patients there are some temptations to depart from straightforward methods, such as one would usually adopt in speaking with responsible persons. There are often not a little craftiness and crookedness on the part of the patient which invite reply in a similar tone. There is not the healthy check of responsibility for a statement that is felt in conversing with a sane person. It seems so easy, so natural, and often so profitable, to answer a fool according to his folly. Then, so much peace can apparently be purchased for the time by a promise made, but not intended to be kept. It would be wrong, perhaps, to say that under no circumstances whatever shall anything be said or promised to a patient that cannot or will not be followed up. In cases of dangerous emergency, involving perhaps serious personal injury, the facts may seem to justify such a practice; but as a principle, otherwise invariable, nothing but fair and practicable promises or inducements should be held out. Patients may through their mental infirmity forget the making of a false promise, but they are apt to be very unforgiving if they should remember it.

More important still is the fact that under no circumstances should an attendant agree for a moment with a patient's claim that he 'is all right, and has nothing the matter with him.' Agreement may for the time bring satisfaction, but not only will it make the work of the attendant himself more difficult later on, but it will interfere with that of others. If it is not necessary to say anything, silence will be the best line to take; otherwise the fact that illness exists must be maintained. Improvement is often found to commence when the patient recognizes that he is out of health, and thus begins to help himself in the work of restoration.

Altruism.—This is a high philosophical term which cer-

tainly would not be used here did it not in a single word exactly express the idea sought. That idea is, to 'love thy neighbour as thyself.' It covers more ground than unselfishness, for it means that an attendant shall not only exert himself in seeing that his patient has all the attention and kindness he is entitled to, but a little more. It entails absolute kindness and forbearance, both in word and deed; inexhaustible patience; toleration of rudeness, absurdity and eccentricity where possible; respect for those inmates who by superiority in social condition or acquirements are likely to feel their position more keenly than others; and so forth. An attendant can always find the guide to real altruism by asking himself the question: Is this what I should like to do, or to see done, for my father, or son, or myself?

In this respect loyalty to colleagues, before insisted on, is sometimes tried most unpleasantly. If one attendant sees another using a patient improperly, what is he to do? The answer is clear: he must stop the wrong at once at all hazards, by appeal or by threat of report, and he must make sure that it will not recur when his back is turned. Anything like talebearing is too hateful a practice to be suggested or thought of, but the cardinal object of asylum, protection to each inmate, has to be maintained, even at the expense of getting a fellow-attendant into the most serious trouble. Where downright cruelty is witnessed, it must be reported without further thought. Even on the grounds of self-protection, an attendant is absolved from any feeling in the matter. He must remember that anyone silently witnessing or allowing improper violence to continue accepts responsibility as an accomplice, however much he dislikes what he has seen. He may be called to account weeks and months afterwards for his unwilling share in the misconduct.

It is asked that attendants and nurses, who on entering the asylum are directed to read this Handbook, will not put the foregoing remarks on one side as a bit of unnecessary sermon-

izing. This, indeed, might be a proper way of treating them if they were intended to adjust the dealings between sane and sane. The case is entirely altered when one side in the dealings is irresponsible. The experience of those who have written this book covers scores of years, and has brought them into close contact with thousands of characters, sane and insane. They know where and how attendants are apt little by little to fall away in these matters, and how difficult it is for them to regain the confidence of their superiors, and the goodwill of their mates and of the patients, when once these are lost. An asylum is not like the open world, where, if there is a want of good feeling between two people, they can keep apart, or where a fresh start can be made. It is hoped that what has been said may induce those desiring success to recognize the value of having good settled principles to begin with. The longer these are kept up, the less will be the difficulty of duty, and the greater will be the fear of losing their help. It is perhaps unnecessary to say that no one is expected to have them all in perfection—that is not to be looked for—but to get the prizes of his calling each should work as if complete perfection were attainable. It will be found that doing what is right will bring its own reward, not only by the forwarding of the hopes of future promotion, but in present ease and contentment. A novice looking round the asylum will be sure to find some officer who gets through his work with comparatively little trouble and with the good-will of all around him. He will find the explanation of this in the last few pages. One word more. Times may arise unexpectedly, and by accident or design, when troubles come; then will be found the value of a good reputation.

VARIETIES OF DUTY.

In order to consider the various duties of an attendant, it is necessary to group them roughly. It is not possible completely to separate in any one respect the duties of the

officer from those of the nurse, care and treatment being so closely intermixed. But obviously there are some broad differences.

DISCIPLINE.

Under this head is included the observance both in letter and spirit of all established rules, laws, and directions in a manner that will best promote their ends. There are two sides from which discipline has to be considered: (1) As it is imposed on the attendant—that is, his duty to the asylum and his fellows; (2) as he should impose it on the patients—that is, his duty to the patients.

1. Discipline is imposed on the attendant (*a*) by the *Lunacy Laws*, (*b*) by the *Asylum Rules*, (*c*) by *Orders*, written or verbal, given by superiors, these being general or personal, abiding or temporary.

(*a*) With regard to the **Lunacy Laws**, few points directly affect attendants, but those that do so are of the greatest importance. One deals with *ill-treatment* or *wilful neglect* of patients. Something has been said about this already, and in another place will be found a formal statement of the grim penalties attached by the law of the land to conviction for this offence. Wilful neglect does not mean only personal neglect; it includes neglect of duty and orders by which a patient suffers injury or worse. Then, it is against the law, and punishable by the law, for anyone without proper authority to 'mechanically restrain' a patient. Such **restraint** has been defined thus (in England): 'It shall be and include all instruments and appliances whereby the movements of the body or of any of the limbs of a patient are restrained or impeded.' Obviously, no attendant in an asylum or elsewhere may do anything of the kind except with due authority. Convictions for these breaches of law are, happily, now quite rare, but everyone engaged in the treatment of the insane should know what the law is.

It may be well to point out that considerably less than a

century ago the chief treatment accorded to the insane was cruel restraint, coercion, and punishment, while a careless disregard of common humanity was considered to be quite good enough for the sufferer. Under these barbarities, and in the absence of such treatment as is now given, patients became desperate and dangerous. In consequence, precautions not dreamed of in these days were used, and were to some extent justified by the circumstances. As soon as the right line of treatment was discovered, and the insane were regarded as patients, need for these precautions disappeared. This little bit of history teaches two useful lessons: A quiet patient may be made dangerous by bad treatment, and one disposed to be dangerous may be almost always disarmed in time by sound lines of treatment which are both philanthropic and scientific.

The law likewise submits to a heavy fine any asylum officer who wilfully permits, assists, or connives at, the **escape**, or attempted escape, of a patient.

(*b*) **Asylum Rules** naturally vary in different places in regard to detail, but in the main they all aim at the proper care of the patients, combined with the efficient and economical working of a great household. The rules must be blindly accepted by the attendants, and faithfully carried out, without argument as to whether this or that is necessary or advisable. As a matter of common-sense, it may be taken that authorities would not go to the trouble of drawing up formal rules unless they were compelled to do so by experience. One rule is against the improper use of **seclusion**, a breach of which is a most serious matter. Seclusion has been defined (in England) as the enforced isolation of a patient by day, between the hours of 7 a.m. and 7 p.m., by the closing, by any means whatever, of the door of the room in which the patient is.

Other rules, though not so formal, are of immense importance, notably those enjoining *punctuality*. The duty of the day has to be done, and done well, by someone. An attendant need only experience once or twice the annoyance and extra trouble that may be caused to himself by the un-

punctuality or the failure of another to abide by rules made for combined work, to recognize how much trouble he may cause by similar breaches. Such breaches are not only attended by trouble, but sooner or later may lead to accident, which is entirely preventable. It is, therefore, the duty of the attendant to make himself familiar with the arrangements and regulations of the institution, and to carry them out in a loyal and conscientious manner. In most asylums, the attendant, on beginning duty, receives a copy of the rules applicable to his work; he should carefully study these rules and act up to them.

All the arrangements of the asylum, which are intended to secure the safety or promote the comfort of the patients, should be intelligently carried out; and the instructions for *routine work*, such as the awakening of patients in the morning, the serving of meals, the bathing of patients, and their supervision when at work or taking walking exercise, should be carefully followed.

The risks of suicide and homicide must be guarded against. Several of the routine regulations in asylums are intended to lessen the danger under this head. Not only are these precautions to be taken for general safety, but it must always be remembered that **opportunity often produces desire.** The sight of a razor left about may suggest suicide or homicide in a patient. This subject will be discussed again later on.

There are also several rules as to what is to be done when a patient becomes violent. **Struggles with patients** should always be avoided, if possible. This is, for reasons already indicated, particularly important in the case of epileptics and general paralytics. When it is necessary to use force, the attendant should not, unless there is no help for it, attempt single-handed to struggle with the patient. It is far better to summon assistance, and get several attendants together, when the patient, seeing that resistance is useless, will often submit quietly; or, if a struggle is still necessary, the patient can now be mastered thoroughly and with sufficient ease, so that

the risk of his receiving injury during the struggle is much lessened. Inexperienced attendants often think it a weak thing to get assistance, and pride themselves on managing a troublesome patient without aid from others. This is a grave mistake. It leads to personal struggles with patients, which ought never to occur; and these struggles are often dangerous to both parties, and are always injurious, because of the bad feeling they create. In certain circumstances, indeed, it behoves the attendant simply to leave the patient and get out of his way; and there is not only no cowardice, but there is real wisdom in such a course, if the patient, while morbidly irritable and quarrelsome, can be safely left alone. Such occurrences should be, of course, at once reported.

Some of the foregoing remarks apply to the lifting of heavy patients who are not violent. Nurses sometimes attempt too much by themselves, and bruises, if not worse things, are needlessly caused thereby. In all cases where force or power may be necessary, the services of two are better than the services of one, because they can be applied at more points and over a greater area, with the result that the force applied at any spot is considerably less. Further, a better choice is offered for the application of force at other than dangerous points—*e.g.*, over the ribs—and there is less chance of bruises being left by the finger-tips. This is a frequent result of an attempt to control patients single-handed.

(*c*) Examples of **Orders** are as follows: In one or more of the wards the patients may, by direction of the medical officer, receive a considerable amount of liberty, because it adds to their contentment; certain doors may be left open, and the attendants are expected to supervise the patients without the aid of locked doors; while in other wards, where the cases are not so trustworthy, the doors are kept constantly locked to prevent the patients passing from direct observation. In these latter wards the door should never by any negligence of the attendant be left unsecured at any time. And equally in the former wards the doors should be kept open at the stated

times, and the attendant, unless instructed by one of the superior officers, commits a serious breach of rule if he locks a door which is meant to be open, simply to save himself some extra work in looking after a troublesome case.

The amount of liberty allowed to each patient is, of course, regulated by the instructions of the doctor. Escapes should, as far as possible, be prevented by watchfulness on the part of the attendants. Certain patients show themselves more prone to escape than others, and they, of course, require to be especially looked after. General paralytics, in the early restless stage of their disease, often make numerous attempts to escape in a foolish, aimless way. When an attendant takes a number of patients out for work or walking, he should know exactly how many are with him, and should on his return count them again to see that all have come back. It is a good practice also to look over the patients when they are at table and at bedtime, and to note from the unoccupied chairs and beds if any are missing.

Other examples of special orders are those given about suicidal patients. When the **suicidal propensity** is known or suspected in any case, the doctor usually gives instructions for the patient to be placed under special observation—that is, to be kept under the direct and constant supervision of one or other of the attendants. Only in this way can we make sure that every one of his actions will be observed and the suicidal tendency efficiently counteracted. When the order for special observation is given, the attendant should carry it out faithfully. There should be no negligence, no allowing the patient to wander away from the room or get out of sight, under excuse, even for a very short time, and no relaxing of the watchfulness without direct permission from the doctor; for there is no knowing when or how a suicidal patient will attempt to carry out his intention. In passing him from the charge of one to another, the first attendant should before relinquishing duty see that the second attendant has duly taken him under his care. In many instances, this passing

over from one to another of patients is signed for by the attendant taking over the charge. In other cases, or where special or exceptional orders are received, the attendant should make a note of them in writing at once; and in order to insure that he is making no mistake, he should show his notes, if possible, to the giver of the order, who may be asked to initial them if he is so disposed.

2. As to the discipline to be imposed by the attendant on his patients, some of the guiding principles have been stated before, but they can well be expanded. In their personal intercourse with the patients, the attendants should remember that example is better than precept. They should themselves, therefore, be examples of neatness, punctuality, and orderly conduct, and should always bear themselves with courtesy and respect towards both their fellow-attendants and the patients. Few persons can exercise control over others, especially if they are weak, without tending to abuse it, and the position of authority in which attendants are placed is especially apt to be abused by coarse and unfeeling persons. This must be guarded against, and attendants should bear in mind that the power over their unfortunate fellow-creatures entrusted to them is to be exercised always justly and considerately, never for the purpose of gratifying any personal wish for retaliation, nor the mere vainglorious desire of lording it over others, but always with a single eye to the welfare of the patient. They should remember that the insane are not responsible for their actions, and should therefore not resent rude language or rough conduct from them, but show constant self-control and kindliness as well as firmness. It is most difficult to distinguish the annoying speech and conduct of many insane patients from the bad conduct of sane people who would deserve punishment. For such insane conduct attendants must never on any account resort to punishment. They should report it fully to the doctor, and he will adopt the proper means for checking it in a medical way, which will have far more effect than the summary treatment of an attendant, just as society is far better governed by a magistrate dealing with offenders

than by each man taking the law into his own hands. Attendants should try to win the confidence of patients by sympathy, kindness, and due consideration for their feelings. They should show no favouritism to particular patients; all should be treated alike as far as possible. They should not hold themselves aloof from their charges or be content with supervising them, but should join heartily in their occupations and amusements, and work both with and for the patients. Much may be done by personal influence, and a patient often is docile and quiet with one attendant, who guides him in the right way, when under another attendant he is troublesome.

When it is necessary to refuse requests made by patients, or to enforce control over them, attendants should constantly refer to their Rules as their reason for doing so, rather than to their own will; for thus there is much less feeling of irritation roused in the patient. Above all things, let it be remembered that 'A soft answer turneth away wrath.' No maxim is of more value in dealing with the insane, or will save an attendant more trouble in the end. These duties call for the exercise of much tact—that knack of knowing how best to manage a patient, which cannot be taught on paper, but which can be acquired when there is forgetfulness of self and an earnest desire to do the best for the patient.

A word as to **reticence**. A good deal has been said about the benefits to be derived from inducing a patient to place his confidence in his attendant. It may be as well to give a serious warning against the attendant *giving his confidence to a patient*, especially about other patients, the staff, doctors, or anything or anyone connected with the asylum. There is no guarantee against a patient, however thoroughly he recovers, again becoming insane. On his second admission the character of his insanity may be quite different from that on the first attack. It is more than probable that he will take advantage of any trust unwisely given to him, and he may make the lives of several most unpleasant. A gossiper can never retain the respect of his patients.

In this connection, too, it may be said that one who desires to arrive at the best position in his calling will from the very first abstain from *chattering outside the asylum* about his patients, their sayings and doings, or about the curiosities of asylum life. Such a practice should be left to those who never will rise in the asylum world. The experienced man, who is reserved about his experience, thereby commends himself to consideration, since he has evidently grasped the fact that nursing the insane is a serious and responsible calling, which is above vulgar garrulity. Still more reprehensible is the *mentioning of patients' names* before strangers, whether inside or outside the asylum. The oath of Hippocrates for medical men runs thus: 'Whatever, in practice, I see or hear, or even outside practice, which is not right should be told abroad, I will be silent, counting as unsaid what was said.' Asylum attendants may well follow this.

MANAGEMENT OF THE BODILY HEALTH OF PATIENTS.

This constitutes another broad division of duty. The attendant will find from the chapters on Sick Nursing much that is to be seen in those suffering from a definite illness, and something about those who are merely ailing. He will also have read, in the section on Hygiene, about the things that are necessary to keep people in average bodily health, as far as their mental condition will permit. To secure this end, a careful **routine** has to be established and maintained; the regular doing of things at regular times will save much trouble and prevent the oversight of duties, etc., that must be performed. By routine in looking after general points affecting a whole ward, time will be saved for observing the bodily condition of the individual patients. As soon as possible, the usual habits of each as to taking food, the action of the bowels, passing water, cleansing, dressing, exercise, and so on, should be noted. With acute cases no regular habits are to be expected

for a time, but with most, after they have settled down, it is not difficult to form for each a *standard*, as it were, departure from which can be easily noted. With regard to taking food, for instance, either mental or bodily disturbance may be indicated by unusually fast or unusually slow eating. Outside the mental state, indigestion, or bad teeth, or unsuitable food, may be the cause of considerable difficulty. All this can be noted, and mostly ameliorated, by the attendant himself regulating the food. Some can take fats and sweet things, while others dislike both. **Constipation** will always be one of the troubles to be looked for, and overcome, in most patients. It is brought about in various ways, and it is worth consideration at some little length, partly because it is in itself a cause of much difficulty, and partly because it so well illustrates the varied and universal domination that the brain exercises over the body and all its functions. As designed by Nature, the taking in of food, digesting it, extracting from it what is useful, and getting rid of the remainder, form a perfect and well-balanced business which, if not interfered with by agencies outside itself, will go on without a hitch as long as the supply of proper food is kept up and satisfactory nerve-direction is maintained. In animals, as they have very limited brain functions, the process is rarely disturbed; whereas in the case of man, especially of man when the origin of nerve-controlling force is itself much disturbed, the case is very different. As has been seen (p. 182), the process of digestion is mostly managed by the sympathetic nervous system, independently of the direct control of the will, but subject to the control of the brain. If the brain itself is out of control, it is not likely to exert a proper influence. The blood-supply, mechanical movements, chemical changes, are ill-regulated; the food taken is manufactured into mischievous and unhealthy elements; indigestion, with discomfort and pain, ensues; and then the whole digestive apparatus follows the general law of automatically avoiding that which is hurtful to it. This leads to dislike, and finally to refusal, of food. The above is probably

what takes place in cases of acute mental disturbance, the condition of the stomach possibly forming the foundation of delusions, such as that poison is put into the food. It might be thought that the indigestion commenced the illness, but, with rare exceptions, it is otherwise, the mental condition affecting the sympathetic system at the outset, and leading up to the indigestion. Our own experience must show how mental is likely to precede stomach disturbance. Excessive grief, trouble, worry, and shock, are mostly followed by evidences of digestive disorder. The mental condition may, however, be coloured by the stomach trouble, as shown above.

Interference with digestion almost always tends towards constipation, though sometimes, at the outset, there may be looseness of the bowels. In health, the course of food down the intestines is urged on by muscular movements in the coats of the intestines. These are stimulated partly by direct nerve-power, and partly by materials supplied out of the food itself. Both stimulants may fail, and the food gets hung up at various places. Or, on the contrary, undue nerve-force may be applied, and then the bowel becomes spasmodically constricted; this also leading to stoppage. Or the fluid that is required to keep the food-mass moist enough to make its way may be withdrawn for use elsewhere.

In the acute state, some or all of these conditions are found. If they are continued long, the bowel itself may get wearied and dull, adding another difficulty. As the urgent mental symptoms calm down, things tend to improve, and often a recovery is heralded by a cleaning tongue and more activity of the bowels. But, if the case is becoming chronic, the tongue may clean, and yet the constipation may remain; this taking place for the following reason: We have seen that digestion goes on independently of the *will*, but the taking in of suitable food is entirely under the will; while for obvious reasons the getting rid of the residuum is mostly, though not entirely, at the option of the individual. Unfortunately, in the asylum the exercise of will is likely to be in a wrong direction. The

suitability of food can, of course, be insured, but the amount taken, and the amount of fluid taken, are in the first instance fixed by the patient. Then he will, very probably, not take time to masticate what he does eat, bolting his food in lumps. As to getting rid of the residuum, will plays a large part, and generally a wrong part. Often there is direct resistance to the passing of motions, this sometimes being due to delusions, or to that state of resistance to everything which is so common in the insane. In some cases, too, the pain caused by hæmorrhoids or other diseases may be the cause, and any appearance of this pain should be at once reported. Or the patient may be too lazy or apathetic to take any notice of the promptings that normally warn people of the duty. Or there may be such a dulled state of the bowels that no promptings are recognized at all. In any of these ways accumulation commences, leading, as it increases, to less and less ability on the part of the bowel to clear itself. Medicine or other means have to be used, and have to be resorted to again and again. The choosing of these is, of course, for the doctor, but to insure the proper exercise of will is much in the province of the attendant, who should never cease from his attempts to get his charges to use it rightly and regularly at fixed times daily. It is by no means uncommon to hear that a patient is eating so little solid food that there is no occasion for him to have a motion each day. In certain cases this may be so, but as a rule it is wrong. The danger of constipation arises, not from the amount, but from the time during which the residuum lies in the bowel, affording opportunity for the manufacture of hurtful materials. Correct habits, once established, may be easily kept up by close observation.

A good deal of the above may be said also of the emptying of the **bladder**. Perversity of will is quite common, while wetting from inattention is well-recognized evidence of mental degeneration, both commencing and developed. The attendant can do much to remedy such failures by giving plenty of reminders and opportunities. Prolonged *retention*, either by

the bowel or the bladder, must be reported to the doctor, while it must never be forgotten that small and frequent passages from both may cover up and mask *serious accumulation.*

The same power of brain over body is illustrated by **vomiting** in its various forms: the noisy, explosive ejection of disagreeing matter; the quieter return of good food, even in small quantities, by the irritable or sore stomach; the easier sickness, often without local symptoms, which frequently accompanies serious brain misehief—these can all be compared with the retching of hysterical patients and with the attempts of patients to cause starvation by bringing their food up.

To sum up special points affecting the care of the digestive system: Sufficient time should be allowed for the taking of food; there should be no undue haste in removing the dishes; and the attendant should see that each patient takes his food in sufficient quantity and in a proper way, duly masticating it. Note should be made of any difficulty in mastication from defective teeth or from any other cause, and also of any evidence of indigestion, such as pain after taking food, or flatulence. Dislike of special kinds of foods or an undue craving for stimulants should be observed. Any tendency to eat garbage or swallow indigestible substances should be promptly reported. Care should be taken that the water-closets are not unnecessarily occupied by some patients, causing delay and inattention in the ease of other patients.

When we come to other matters more dependent on the will, we naturally meet with much variation in patients, and much more trouble. Some will do nothing to clean themselves, while others would be washing all day. Some will require and will take much exercise; others, requiring as much, will take none. Others, again, from their restlessness, will wear themselves out by perpetual motion; and some have, from physical disease, to go with but little exertion. In all such things it falls to the attendant, under medical orders, to

see that each gets as much as may be good for him, and but little more. An attendant really has to think for the patient about everything: he has to take care that he is kept moving in damp or cold weather when out of doors; that wet or damp clothes are dried without delay; that fresh clothing is suitable and sufficient for the season of the year for the case, and aired and warmed before using; that boots are dried and in good repair; and things of that kind.

He must also take note of any symptoms of *bodily derangement* or *failing health*, such as cough, breathlessness, loss of appetite, wasting of body, increasing feebleness in walking, etc., and to report them without delay to the medical officer, so that any treatment which is called for may be begun at once. It is likewise a good rule to examine the patient's person carefully every time he is being dressed or undressed or bathed, and to observe whether there are any abnormal appearances, such as bruises, marks of injury, redness, swelling, eruptions on the skin, commencing bed-sores, etc. When found, these should be reported to the doctor at once. An examination should also be made as soon as practicable after any fall, struggle, or collision with other patients, and any indication of injury should be immediately reported.

In weakly patients the attendant must constantly examine the head for the parasites described on p. 76. In ill-nourished patients they develop with startling rapidity.

THE CARE AND MANAGEMENT OF THE MENTAL CONDITION OF THE PATIENT.

This is the third and last of the groupings of duty. There are a few general considerations which will be of service in suggesting right lines for an attendant to go upon in this, the principal part of his work.

It is very important to consider how far, and to what extent, an insane differs from a sane individual. Formerly it was the universal custom, and it is not uncommon even nowadays, to

look on a person who becomes insane as having entered an entirely separate division of humanity, incapable of being trusted, and a subject of wonder if he retains any signs of intelligence or orderliness. Now, of course, we know that this is mostly wrong; an insane person is a sane person gone wrong in his mind, more or less. In only one respect does he differ essentially from his former self—he becomes non-responsible. In all other matters we should try to deal with him as an ordinary man, as far as his illness will permit. At first, of course, until some idea of the case is formed, it is necessary to be on guard against possibilities.

On taking charge of him, the attendant should at once try to obtain his confidence by kindness and sympathy of manner, by watching over his comfort, and by explaining the misapprehensions which so commonly exist in the minds of the insane. In this way his ideas and feelings, the character of his delusions, and the probable nature of his conduct, may be learned. The attendant will then be better able to guide and control him in a suitable manner. An attendant will do the same in taking charge of any case, recent or chronic, which is unknown to him, and in both it will probably be found that the treatment of a patient as a *reasonable being*, as far as may be, will make the management of him easier. It flatters him, and at the same time permits and encourages a sort of trustful feeling, which would be killed at once by an air of superiority or dragooning on the part of the attendant. This feeling a skilled attendant requires to instil in order to help the patient over his difficulties. Without it the latter will feel himself lost in a strange place, without a friend of any sort, and probably he will become resistive and suspicious; if, on the other hand, he finds a real friend—unexpectedly, perhaps—in his attendant, he probably will be only too glad to lean on him for advice and assistance, to the benefit of all concerned.

Another advantage of starting with the idea that a patient would be and would behave like other persons, but for circumstances out of his own control, is that it leads up to an

endeavour to puzzle out what these mischievous circumstances may be; it may be taken as certain that they do exist, even if they cannot be discovered. In cases of acute and definite disease, the inquiry need go no further back than this: the disease is the cause, as far as the attendant is concerned. As the disease abates, so will there be less need to look further into the difference between abnormal and normal. But in some cases recovery, though confidently looked for, does not come, and in chronic cases there may be signs of relapse into trouble. In all such it may be surmised that there is some additional cause at work—perhaps unimportant, discoverable, and removable—and the attendant should never cease thinking over what it can be. It may prove to be some bit of jealousy, or grievance, or offended pride, or bad habit, or physical change, or even the sheer want of a helping hand that stands in the way. The searching for the reason will never be lost time, as the experience gained will always be serviceable under similar circumstances in the future, even though in the particular case the actual cause may be only assignable by the doctor, and therefore beyond the scope of the attendant.

It does not require a long residence in the asylum ward to discover a leading fact which works against recovery or real improvement. In almost every case an insane person is an *intensely selfish man*. It is not meant that he necessarily wants to have more than his neighbours of food, space, and comfort. But *self* is his only study; all his thoughts, feelings, and actions are referred to and judged by his own condition. It comes about in this way: The first instinct of man is to live and have his being, and for this end he studies his own interests only. To that first instinct are added others of a finer nature, with higher desires and wider feelings, each addition lifting him higher above the mere animal. The last and finest of these are a desire to do good to others, affection for friends, and reliance on religion. When the brain-storm comes, these last additions go by the board, self is raised above others, friends are forgotten and uncared for, and,

though there may be prating about lost souls, etc., true personal religion is not found even, perhaps, where once it stood most strongly. The unfortunate man is driven in on himself; he can only ponder over himself and his grievances; and unless relief is brought to take his mind on to brighter and better subjects, he can but go from bad to worse. It may be said that the majority of the old chronic patients who line the walls of a ward, silent, surly, and resistive, have gone through these stages.

It must be obvious that the best remedy, the best means to cut short downward progress, is **occupation**, both mental and physical, which acts by substituting a worthier subject than self for thought. This is where a skilled attendant can do so much towards restoration. When the right times comes, he will find means or opportunity, for instance, for the patient to give him a little help, or perhaps to get him to take charge of some trifling matter that will flatter him; or he may get him to give a helping hand with some other sufferer, thus encouraging a feeling of responsible usefulness, and leading him to think of others.

Of course, all this cannot be done right away from the beginning, and even when improvement does commence, it will be well to remember that after severe disease the brain is likely to be tender for some time to come, and it must not be pushed too soon or too hard. Some patients, for instance, desire to write far too soon, and, unfortunately, the law permits certain letters to be written as of right. The experienced attendant will always do his best to dissuade a patient in a state of recent mental derangement from even thinking of such a thing. The writing of a letter is usually one of the most trying ordeals that can be laid on the majority of brains in an asylum. To begin with, it demands close 'attention' (p. 207); it troubles a man to think of what he wants to say and how to say it. Then he has to tax his brain to manage spelling, and to direct the actual making of lines, words, and letters. The emotions, also, are likely to be seriously tested; the patient

may want to speak on paper, under trying circumstances, to those for whom he has deep affection or deadly hatred. When all is done, he is apt to wonder painfully whether he has done the right thing, or has caused hopeless mischief. We must remember that the power to write a letter in health has been slowly acquired by education, and that the continuance of that power depends on the effective maintenance of important brain functions. Insanity has the effect of diseducating many of those who suffer under it; those functions are put out of action, temporarily or for ever, or at least they are rendered dull, uncertain, or incorrect in use. Re-education must be undertaken with great caution. Of course, writing of the first and subsequent letters (unless they are to be written as of right) will be subject to medical permission, but the attendant must watch most carefully for signs of the patient being 'bothered,' dazed, or depressed in the process; and should these signs be noticed, the writing must be at once suspended for further medical direction. The most precious time for assistance is when improved bodily health shows that sleep and good digestion are returning. Illustrations in papers and magazines are at first the most useful means of diverting attention from self; they may possibly start some better line of thought, and they have the advantage of requiring less mental activity than printed matter. Hard physical work, such as digging, or gardening, or laundry work, is of the greatest use in many cases, since it does not overtax the mental capacity, and, of course, properly directed recreation is of the utmost service. A simple game of cards may arouse a little desire to be successful, while a hearty laugh at some entertainment, or the discovery that a dance is unexpectedly pleasant, may start the patient on the road to recovery. Even the discipline of being expected to behave properly at meetings for recreation or at church service has the best effect. Still later it will be advisable to discover what the patient's natural bent or hobbies may be, so that in the direction either

of industrial work or of recreation the idea of usefulness in the world may be brought back, if possible.

One of the great difficulties in the daily life of the ward is the dealing with the false ideas of patients. These include **delusions, illusions,** and **hallucinations.** The treatment of them must depend mostly on their own nature, as well as on the character of the patient and of his illness. It is of no use discussing them with irritable, obstinate men, nor with one who simply states his delusions to start an argument, or perhaps to pick a quarrel. So, too, with patients who have nourished a fixed delusion for years, discussion is hopeless. Nor is much good to be got by it where the idea is extravagant, such as that the patient is the 'king of the world,' etc. With all these, should there be need to speak of the delusions at all, it is best to close the conversation as soon as possible with the remark that there is no chance of agreement. The attendant should neither bring up the subject nor allow anyone else to do so. Under no circumstances is it permissible to laugh at or banter a patient on his delusion, or to allow anyone else to do this, or to give him a nickname founded on the delusion. Such a practice has a bad effect on the patient, because it tends to obliterate any desire for help that he may show, and it is apt to make him irritable, and thus decrease his chance of improvement. It is bad for other patients, who quickly see that there is no reason why their own peculiarities should not also be ridiculed; and it is particularly bad for the attendant himself, as it leads him away from his prime duty of protecting his charges. He may find it very difficult to make a right start again.

But, on the other hand, it is not right to say that an attendant shall never argue about delusions with any of his patients. One of them may look to him as his best friend, and, in fact, the attendant may be the only one who gets a favourable opportunity of saying the right thing at the right moment. When, then, a 'sensible' patient appeals to him for aid, can he send him away with flat denial, with no attempt to explain

The safest way is to listen to what he has to say, asking a question now and then to show that attention is being given, and after that, without for a moment admitting that what he says is right, to work out with him the results that would follow if he were right. Sooner or later some contradictions are bound to come up. These may not be acknowledged at first, but it very likely will be seen that doubt on some points creeps into his mind. When doubt once comes, there will be the better chance of overcoming his stubbornness of belief. But, if positive good is not done, there will be at least the belief on his mind that he is being treated in a natural manner.

The case is made much more difficult when *hallucinations* are present. In but very few of these cases can any good be done. When the hallucinations occur in acute insanity, as they so often do, there is but little opportunity of talking about them; they are part of the attack, and often go as the attack passes away, or remain when recovery does not take place. On the other hand, the hallucinations often mark a further stage in such cases as described above, where a man is driven in on himself; and they are quite incurable, not only from the lapse of time, but because they almost invariably confirm the patient in his unhappy, miserable ideas, centring in himself. Still, if a patient asks in a right sort of way for any explanation that the attendant can give him from his experience, the best thing to say is that the brain plays queer tricks with people. It allows happy, funny, sad, and all kinds of memories to come into one's mind without any apparent reason, and in the same way it allows old memories of voices once heard to come back unbidden. This is reasonably near the truth, and it may serve to start a beneficial doubt; at all events it saves the need to give the only other explanation—that the patient is downright out of his mind.

A cheerful frame of mind has been mentioned, in a former page, as desirable for an attendant. To this may be added a full measure of **hopefulness** in regard to the future of all patients, except the most pronounced cases of chronic insanity.

Recovery sometimes comes even to the surprise of the doctor, and the attendant should never let the patient see that he has given up hope.

There is a good deal to be said about **suicidal tendency** from the doctor's point of view—as to what may be the exact probability in a particular case, how it is likely to show itself, and so on. But there is only one thing to be said from the attendant's point of view—that it is the doctor's duty to think these matters out, and the attendant's implicitly to do what the doctor orders. It is quite easy to be doubtful as to the wisdom of orders—to think also, perhaps, that the patient 'talks too much about it ever to do it.' An attendant who is foolish enough to forsake the protection afforded by medical orders will deserve all the trouble that he is likely to experience.

The precautions that are prescribed by general rule and by special order have already been referred to. But the ways of committing suicide are so very varied that these are not sufficient by themselves. The reader is again referred to the section on Accidents, etc. (p. 56), for a full description of possible methods. It must be repeated that only continuous watching can make sure that the patient's every action will be observed, and the suicidal tendency efficiently counteracted. It may be necessary to search the patient's pockets and clothing frequently, and to examine him carefully when he is put to bed, to see that he has not succeeded in secreting anything that may be used hurtfully. Melancholic patients are often at their worst in the early morning, just after waking and before food has been taken; while after breakfast, as the day wears on, they get less wretched, and the suicidal desire less marked. It is often advisable to give the patient some food, such as a cup of milk or warm coffee, immediately on his waking.

It may be mentioned that occasionally patients who are nearly well from melancholia have a short, but distinct, return of suicidal tendency. Attendants should keep their eyes on such, even if the orders for continuous watching have been

withdrawn. If they feel at all uneasy, they should draw the attention of the doctor to the case.

Homicidal tendency is even more to be dreaded than suicide, but it, fortunately, is far more uncommon. In acute cases, it may be that the patient under delusion attacks anyone near him, and may inflict fatal injury ; or it may be that the patient is ready to kill himself as readily as another. The very acuteness of the symptoms forms some sort of protection, since it makes constant and efficient watching absolutely necessary. But there are others, who are either epileptic, or under the influence of aural hallucinations, or under the dominion of uncontrollable promptings, who entertain—it may be all through the day, or only for a few moments—the most dreadful desire to take the life of the first person met, of some special person who is connected with the delusions, or of some other. The impulse setting the patient in action may come on instantaneously, even in the course of conversation. There is no known way of specially forestalling the tendency, the only preventive being ceaseless watching, until in the lapse of time it fades away. But there is one most important fact never to be forgotten—that **impulse is readily begotten by the sight of means to gratify it**. It is the same with suicide. Anyone who leaves unprotected about the wards or premises of any asylum weapons such as knives, hammers, scythes, or broken glass, etc., is almost as responsible for deeds committed with them as if he suggested to the patient that these deeds should be done. Carelessness is not confined to the matters mentioned above. The negligent loss of keys, or leaving doors open, may enable a dangerous patient to make an opportunity for himself. Responsibility in such matters is one of the incidents of asylum life which can only be met successfully by the formation of methodical habits.

Dangerous assaults may be made, not for the purpose of taking life, but merely of inflicting damage. Often these are prompted by a delusion that mischief is being done or threatened to the patient, or in obedience to an impulse, or from

uncontrollable irritability. In any case, patients subject to these influences require careful watching; while in the former still greater care is necessary, as violence may easily pass into homicide.

All those acts and habits which spring from the diseased mental condition, and which are therefore morbid and unnatural, should be repressed as far as possible, and correct habits inculcated in their place. Thus *destructiveness* and all other mischievous propensities should be checked. *Slovenliness* in dress and *disorderliness* in eating should be corrected, and patients encouraged to be neat, tidy, and orderly. When food is refused, much may be done by tact in persuading the patient to take it. Sometimes patients, while refusing all food offered directly to them, will readily take anything they can steal or pick up unobserved; and advantage may be taken of this peculiarity to get them to take food. The eating of leaves, cloth, and other improper things, should be prevented, for the patient may thereby injure himself seriously. Some general paralytics are especially apt to eat ravenously, stealing the food from the plates of other patients, and cramming it in great pieces into their mouths, at the risk of choking themselves. This propensity should be guarded against. *Dressing fantastically*, in obedience to a delusion, should not be permitted. When *wet and dirty* habits are due to the mental condition, not to bodily paralysis, much may be done by assiduous attention by the attendant in training the patient to attend to the calls of nature at certain regular times, and in getting him into more correct habits.

Bad sexual practices are, unfortunately, common among the insane, and ought to be prevented as far as possible. The possibility of any patient indulging in bad habits should be borne in mind, and a constant watch for signs should be kept up. The detection of any such habit should be reported; and when, as sometimes happens, the patient himself is desirous of checking it, he should be encouraged in his effort by fitting advice and by help in finding occupation and amusement for him.

All that has been said before about the need for close observation of the bodily health of each patient applies to the mental health even more strongly. In acute cases, change in mental symptoms is endless, and is to be expected. With most chronic cases, the tendency is to settle down into a groove, in which for years the mental work of a patient day by day varies not at all. But with many of them relapses are apt to come on, even at great intervals of time. These are generally heralded by some signs of variation in the habits, unnoticed by the ordinary eye. The experienced attendant, however, recognizes them at once, possibly as foretelling months of severe trouble to come. As with acute attacks so with these, much may be done to reduce severity of symptoms by taking them in time, though it very often happens that, in spite of all endeavour, the relapse will come. These cases are worthy of the closest study, as they very often show the stages through which the brain goes in reaching the full development of mental disease, which stages in first-attack cases are passed through outside the asylum. Useful lessons may be learnt from them about the reasons for the insane being invariably treated as irresponsible. One can see the gradual but ever-increasing loss of self-control, and the eclipse of judgment coming on, regardless of remedial measures. An observant attendant will find interesting evidence of the manner in which the human brain is impressed by passing events in some of the mild eruptions that take place in old-standing cases of dementia, in whom no sign of fire exists until it is revealed under passing excitement. Old memories, old hatreds, even old hallucinations and delusions, formed and stored away when there was sufficient brain-power for the purpose, come forth in unexpected abundance.

In particular cases, a daily report of mental symptoms and phases is generally required of the nurse in charge, and these will be recorded in the form chosen by the medical officers. But each attendant can with advantage keep, for his own improvement, notes of cases which interest him, using the

same methods. In this practice he may find much to relieve the monotony of ward life. A suggestion of a convenient form for observing and noting particulars will be found on p. 259.

In conclusion, one caution must be given to those who strive to improve themselves. It must be clearly understood that all the trouble which is taken in training attendants, and all the varied information given in this book, are primarily intended to educate attendants thoroughly for their duties as attendants, and for nothing more. It is not intended that they shall consider themselves qualified to give advice or proffer opinions, unless they are asked to do so by their superiors. Nothing is more annoying to medical men than the officious intrusion of ill-formed ideas, clothed, perhaps, in misapplied medical terms; but nothing is more appreciated than a modest and accurate report produced, on request only, by one who is known not to speak for the sake of showing off knowledge. The former produces no effect, except distrust; the other leads to increased trust and consideration.

ATTENDANCE ON THE INSANE IN PRIVATE HOUSES.

Attendance on those suffering from mental disease in their own homes or in lodgings is now one of the recognized branches of nursing. Few patients in the higher classes are sent to asylums without home treatment having been tried in the earlier stages of the disease. A good attendant is of incalculable value in the home treatment of a case of insanity. Through such services, an attack may be cut short, infinite anxiety and risks saved to patients and relatives, accidents avoided, suicides averted, and valuable lives restored to reason.

The chief differences between treating a case at home and in an institution are the following:

(1) Less help can be got either from fellow-attendants or doctors, and therefore more forethought and observation of

the patient's symptoms, more resource and self-command, are needed. (2) The risks are far greater from stairs, open windows, razors, knives, etc., and therefore the first thing an attendant in charge of a patient at home must do is carefully to obviate such risks, as far as may be necessary, by taking possession of keys, removing bolts from the inside of water-closets, checking windows, arranging for rooms on the ground-floor, and putting away knives and razors. (3) The difficulties of getting the patient to take food, medicines, and exercise are much greater; therefore, if these things cannot be done by tact and persuasion, the patient will probably have to do with less of them than he needs. A patient will usually be found to be much harder to control in his own house than anywhere else, and more apt to resist interference with his liberty. (4) The relatives of the patients will often be suspicious, or lose their heads from fear, or be fussy, or possibly obstructive; therefore an attendant must be patient, but firm, with the relatives and friends, and, above all things, must get the doctor in attendance to give explicit orders for the course adopted, and to take the responsibility for the instruction required. It is in many cases better that the doctor should suggest that the patient should be left with his attendant without relatives coming in to interfere too much. (5) The labour is more exhausting, often involving night and day work. An attendant should speak before his own strength and nerve give way, and should ask for assistance. (6) It falls more directly on the attendant, being by himself, to note whether the patient is in any way suicidal, and to take measures for his being properly watched. No mental nurse should ever go to a case without thinking of the question of a suicidal tendency. (7) As his position is isolated, he should ask the doctor very minutely about the treatment and contingencies, and speak fully about his difficulties, and he should report all struggles with the patient, etc. A good attendant can help the doctor greatly by keeping a daily written note of (*a*) the food taken; (*b*) the amount of sleep; (*c*) the length of time in the open air;

(*d*) the patient's temperature; (*e*) the chief mental symptoms, with the changes that take place in them; (*f*) the patient's weight, if possible every week, if the case is long-continued. Such observations are very good for the attendant himself, and give confidence to the patient's relatives. (8) As he should be above suspicion, it is usually better not to take any alcoholic stimulants at all while on duty; better still, to take none at any time.

To have the care of a few cases in their own houses or in lodgings is very good for an attendant trained in an institution. It makes him more watchful, more self-reliant, and more thoughtful, and he feels his own responsibility and the importance of his duties more. He should keep his place as the patient's *nurse*, and not mix with the servants, and, above all things, should not gossip, either in the house or out of it, about the patient's symptoms. Most likely he will at first be looked on with some suspicion or jealousy by those in the house, therefore he ought to be very prudent in his conduct; but if he does his work well, and the case turns out satisfactorily, he will often be rewarded by the gratitude and goodwill of his patients and their relatives.

SECTION V

DISEASES OF THE NERVOUS SYSTEM

In this chapter we shall consider nervous disease as distinguished from mental disorders; for although the latter is frequently dependent upon the former, nevertheless there are diseases of the nervous system in which the functions of the mind may be but slightly affected. It will be more convenient for the nurse, in the first place, to learn the several **symptoms** that are commonly associated with the various nervous diseases, and after having acquired this knowledge it will be easier to discuss the more common nervous disorders. The following symptoms will be briefly referred to: (1) *Motor disturbances;* (2) *sensory disturbances;* (3) *disorders of special sense organs;* (4) *disorders of reflexes;* (5) *general nutritional changes;* (6) *disorders of the excretory system.*

1. **Motor Disturbances.**—The muscles may lose their power and the limbs become paralyzed. Now, this condition may be brought about by certain diseases of the brain, spinal cord, nerves, or even by changes in the muscle itself. This loss of power varies in degree from a condition of slight weakness to that of total paralysis. Although a person may be unable to move voluntarily a special group of muscles which move a limb, these paralyzed muscles may contract and relax involuntarily, and the condition is then spoken of as spasm, or convulsion. We speak of a *clonic* spasm when a muscle alternately contracts and relaxes, as in tremor; but if the muscle remains continuously contracted for several seconds,

minutes, hours, or days, the spasm is then referred to as a *tonic* one. Examples of the latter are cramps, the first stage of an epileptic fit, etc.

All our movements depend on *co-ordinated* or harmonious action of the various groups of muscle, but in certain conditions the muscles fail to act in this way, and inco-ordinate or irregular movements result (ataxia). Intoxication from alcohol will produce this state, and it is also one of the common symptoms of a spinal disease known as locomotor ataxy.

2. **Disorders of Sensation.**—*Pain* is the most common disorder of sensation, and it may be brought about by definite changes in the nerves themselves, such as in *neuralgia* and *sciatica*. The actual sensibility of the skin surface of the body may be altered; for example, when touched or pricked, it may be lost (*anæsthesia*), or increased (*hyperæsthesia*), and the patient may be unable to distinguish between articles which are hot or cold. Loss of sensation for touch, heat, or cold are not uncommon in certain patients with paralysis—a point to be borne in mind when applying a hot-water bottle to such a person's feet. Sensation is frequently found to be blunted in the insane; therefore disease sometimes develops in asylum patients without its being recognized, because pain, which is a warning to the sane sufferer, is not so readily felt.

3. **Disorders of the Special Senses.**—The extent or acuteness of **Vision** may be affected in some forms of nervous disease. The field of vision may be roughly tested by making the patient close one eye and then the other, getting him to fix his gaze on some object, such as a pencil-case, held in front of him; then, by moving about a second object, the extent of the visual field can be obtained. Acuteness of sight is examined by means of test types—*i.e.*, printed letters of varying sizes on boards, placed at a fixed distance from the patient. Range and acuteness of vision are usually affected in cases of brain tumour. The eyes may water when exposed to light, and this intolerance, due to oversensitiveness of the retina, is spoken of as *photophobia*. Some of the muscles which move

the eyeball may be weak or paralyzed, and, owing to the counteraction of the remaining healthy muscles, the eyeball may be drawn inwards or outwards, and we then speak of this as a squint (*strabismus*). The *pupils*, or black spaces, in the eye may be unequal in size in the two eyes, or the pupils may not contract when the eye is exposed to a bright light. These symptoms are common in patients suffering from general paralysis.

Hearing.—The sense of hearing may be affected. It may be too acute, and slight sounds may irritate the patient, as in fatigue conditions; or there may be dulling of the sense. The acuteness of hearing may be easily tested by holding a watch at a distance from the patient, and gradually moving it nearer until the sound of the ticking can be heard; and a tuning-fork is also a valuable instrument for testing the sense of hearing. The patient may complain of noises or humming in the ears, or he may hear definite *voices* (hallucinations).

Taste and **Smell** may be disordered, and may be either perverted or lost. Taste is usually tested by sweet, bitter, acid, and saline substances, and smell by camphor or asafœtida.

4. **Reflex Symptoms.**—In Chapter I. of Book II. the reader has learnt what is understood by reflex action, by which sensory *stimuli* are converted into movement without the intervention of the will. Now, in certain forms of nervous disease these reflex movements are altered in character, and may become exaggerated or 'lost.' The superficial or skin reflexes may no longer respond to stimulation, and by noting these it may be possible to discover the area of disease in the spinal cord. The deep reflexes, such as the *knee-jerks*, may be lost in certain diseases, as locomotor ataxy, some types of general paralysis, or in some forms of alcoholism.

5. **Nutritional Changes** may take place in the skin, muscle, bones, or joints. The skin may become like parchment, the hair brittle or come out, the nails grooved, opaque, or brittle. The ligaments of a joint may soften, and no longer keep the bones of a joint, such as the knee, in position; the bones

themselves may become brittle, and may readily fracture, as in the case of the ribs in a patient suffering from general paralysis. A vesicular eruption, commonly known as 'shingles' (*herpes zoster*), may appear along the course of a nerve, such as one of the intercostal nerves.

6. The Excretory System.—The patient may lose power over his bladder. He may no longer realize when the bladder is full, and retention may result. On the other hand, the bladder may empty itself involuntarily at periodic intervals, or the urine may dribble away constantly, in which case the condition is spoken of as *incontinence*. All these respective conditions require the careful attention of the nurse.

Common Nervous Disorders.—We will now briefly consider some of these.

As in all other tissues of the body, nerves may become inflamed, and the condition is spoken of as **Neuritis**. Apart from surgical reasons, neuritis may be produced by pressure or cold, by a poison, such as alcohol or lead, or it may arise as a late symptom in some of the specific fevers, especially diphtheria. The symptoms largely depend upon whether it is a sensory or motor nerve that is attacked. More or less acute pain in the course of the affected nerve is almost a constant symptom, and if it is a sensory one, there are usually patches of lessened sensation (anæsthesia) or heightened sensation (hyperæsthesia) in the areas supplied by the inflamed nerve; and if it is a motor one the muscle supplied by it may be weak or definitely paralyzed. For example, in lead-poisoning the patient usually has a dropped wrist, owing to paralysis of the extensor muscles at the back of the wrist, or he may be unable to use his lower limbs in case of alcoholic paralysis; or, again, if it is the facial nerve that is affected, the mouth is drawn over towards the healthy side of the face—in other words, there is loss of expression and lengthening of the face on the damaged side. Apart from definite neuritis, there is a condition which we speak of as **neuralgia**. Here the distribution of pain is usually more limited than in neuritis. It may be produced by cold or by something irritating the nerve-ending, as in the case of a decayed tooth. The treatment is, to remove the cause and to relieve the pain by drugs or counter-irritants, such as heat or mustard-leaves.

Diseases of the Spinal Cord.—There are several diseases of the spinal cord, but most of them do not call for description in this book. All that is requisite for a nurse to know are the important symptoms associated with spinal cord disease, and the special management of them. As the reader is aware, the spinal cord contains nerve cells and motor and sensory fibres. Now, one or all of these may be

affected. As the spinal cord is narrow in diameter, if there is any local injury to it, either by disease or accident, it is usual to find that the limbs, and, in fact, all parts of the body below the seat of the injury, are affected. The following are the most common symptoms: (1) Weakness or paralysis of the lower limbs (paraplegia), and of the upper limbs also, if the damage to the cord is in the cervical (neck) region. The reader will note that the paralysis is on *both* sides, and not on one only, as usually occurs when the damage is in the brain; (2) sensation is also affected below the seat of the injury, and the patient cannot feel properly. *Bed-sores*, from nutritional failure, are apt to form at points of pressure, such as the sacrum, heels, and trochanters. The bladder and bowels are usually affected. Urine is retained, or there may be incontinence; and excretions are passed involuntarily. The bladder may become inflamed, and in consequence the urine becomes foul. The nurse must be prepared for all these contingencies.

Locomotor Ataxia.—This is a disease which usually occurs in middle or later life. The most noticeable symptom connected with it is the unsteadiness of the patient's gait, especially in the dark. Owing to disease being chiefly in the sensory fibres of the spinal cord, he is unable to feel the ground properly, and has to depend largely upon his eyesight for knowledge of his position. If he puts his feet together, and then closes his eyes, he will stagger and fall. This uncertainty of movement is spoken of as inco-ordination (ataxia). In addition to this symptom, the patient usually complains of shooting pains in the legs, cramps in the abdomen and elsewhere. His pupils do not react to light, and his knee-jerks are absent.

The *management* of the patient, apart from any special treatment that may be ordered, is to watch for retention of the urine, and to prevent bed-sores developing. The disease is a slowly progressive one, but the patient may live for many years.

Diseases of the Brain.—We will now pass on to consider some of the more common **affections of the brain and its coverings** (membranes). An inflammation of the membranes covering the brain is spoken of as **Meningitis**, and it may be of two kinds: (1) Simple, or (2) tubercular. The former more commonly affects the upper surface of the brain, and the latter the base of the brain. The tubercular variety is much the most common type of meningitis, and it occurs with greater frequency in childhood. It is caused by the same bacillus that produces consumption — the tubercle bacillus. It is not usually an independent disease, but is often associated with acute tuberculosis. The patient usually dies within a month of the earliest symptoms.

Hemiplegia.—By hemiplegia we mean paralysis of one side of the body. It is usually produced by some injury to the brain on the side opposite to the paralyzed limbs. The injury is usually brought about by the rupture of a bloodvessel in

the brain (cerebral hæmorrhage, or apoplexy). The face, arm, and leg on one side may all be affected in the manner described under 'Apoplexy.' The paralyzed limbs may recover in a few weeks, or they may remain weak, in which case the muscles of the paralyzed limb slowly contract and become rigid.

Apoplexy.—As already stated, by apoplexy we mean a hæmorrhage into the brain substance. The patient may become rapidly unconscious, or the symptoms may develop more slowly, and be preceded by headache or difficulty in speech. The patient is most commonly a person who is advanced in life, and whose arteries have become brittle. The usual history of an apoplectic fit is as follows: The patient may have had a convulsion or twitching, after or during which he rapidly becomes unconscious, or *comatose*. He appears flushed, and the veins of the neck are distended; the breathing is slow, laboured, and noisy (*stertorous*), and there is puffing out of the cheeks during expiration; the pulse is slow, full, and soft. There is hemiplegia on the side of the body opposite to that of the brain in which the hæmorrhage has occurred when the hæmorrhage is in any area above the pons. The patient may die or remain unconscious for several days.

Management.—The patient should be kept lying down, but if placed on one side the breathing is greatly relieved and the stertor disappears. The bladder requires careful and regular attention, and a free purge is usually prescribed. The risk of bed-sores must not be forgotten.

There are several other diseases of the brain, such as *cerebral tumour* and *cerebral abscess*, which may give rise to severe symptoms. The former usually produces vomiting, severe headache, convulsions, giddiness, and local paralyses. The symptoms of these and other similar diseases are often very complicated, and are too difficult to discuss in a textbook for nurses.

Epilepsy.—Epilepsy is a disease which shows itself by sudden periodic disturbances of the brain functions, usually causing the patient to fall. The symptoms vary in the different forms of the disease. In 'major' epilepsy there is loss of consciousness, which is immediately followed by a

convulsion; but in some types of the disease there may be only a momentary unconsciousness, with or without a fall, or consciousness may only be impaired; but in this latter case the condition is commonly attended by some sensory disturbance, such as hallucinations. The majority of cases of epilepsy begin before the age of twenty years. A very large number of epileptics have had parents or near relatives who have suffered from insanity, epilepsy, or a similar severe nervous disease. Epilepsy and insanity are very closely allied. Frequently, the history given by the friends is that the child had a fright or fall, or that the first 'fits' came on during teething or an acute illness such as scarlet fever; but these are usually merely exciting causes, whereas the predisposing cause is the child's inherited tendency to have nerve-storms.

Symptoms.—There are two well-marked forms of epilepsy which will be described: (A) 'Petit mal,' or minor epilepsy, in which there is only momentary loss of consciousness. The patient neither falls nor is convulsed; for example, whilst he is talking, he will suddenly stop and look vacant, but recover again in a few seconds. From the standpoint of recovery, this type is less favourable than the next variety, which is known as (B) 'grand mal,' or major epilepsy. The ordinary fit consists of four stages: (1) Sudden and complete loss of consciousness, followed almost immediately by (2) the stage of *tonic* spasm, during which respiration is arrested and the muscles all over the body are rigid; the face becomes congested and the eyes fixed; lividity is caused by the deficiency of oxygen in the blood during the time that respiration is suspended. In about half a minute the next stage is reached, which is known as (3) the stage of *clonic* spasm. Respiration returns in a jerky manner, and the muscles of the body and of the limbs begin to twitch convulsively. This twitching frequently commences in the face, and gradually extends to the rest of the body; the tongue may be bitten, and there is frothing at the mouth. The patient is still quite unconscious, and during this stage, or earlier in the second one, urine and fæces may be passed

involuntarily. In about a minute and a half (4) the last stage, that of coma, is reached, in which the patient lies for some hours in a condition resembling sleep; but in a certain number of cases this stage is absent or is replaced by a period of intense violence and excitement. When one fit follows another so rapidly that consciousness is not regained between them, the condition is spoken of as *status epilepticus*. Although commonly a fit develops so rapidly that a patient has not time to recognize or state that a seizure is coming on, on the other hand, some epilepties always have a warning (or what is called an *aura*) that a fit is impending. The aura may be a sudden sensation of light, colour, or odour, or a peculiar feeling in the hand, which slowly extends up the arm and over the body till the patient suddenly loses consciousness. In a case such as this, tying a ligature around the arm the instant the sensation in the hand is felt may stop the fit.

Course of Epilepsy.—The fits may occur only at night, or only in the daytime, or at irregular intervals. They may always take place after a bath or at meal-times, and it is important for a nurse to note any special incident that seems to be the exciting cause, for the knowledge of such may be very helpful in the treatment of the case. If the disease persists, the patient sooner or later exhibits signs of failing memory, and also there is frequently a deterioration of general intelligence and moral character. Epilepties are frequently irritable and suspicious, and some are definitely dangerous, but these symptoms have been referred to when dealing with epileptic insanity. Epilepsy seldom causes death except from the result of an accident sustained during a fit.

The *management* of epilepsy includes that of (A) the fits, and that of (B) the interval between them.

(A) The patient usually utters a peculiar cry as he falls. This cry is caused by the sudden tonic action of all the muscles of the chest and larynx, which drives the air out of the lungs through the vocal cords. When this is heard, an attempt should be made to catch the patient; otherwise he

may fall and injure himself, especially as some patients always fall on their heads. If he falls forward, the tongue is usually caught between the teeth and badly bitten. The following are the nurse's duties :

1. Prevent a patient falling and hurting himself.
2. Place something, such as a piece of wood, between the teeth to protect the tongue.
3. Loosen the clothing about the neck.
4. Place a pillow under the head and remove any furniture near the patient ; otherwise, when the clonic stage develops, he may bruise himself.
5. If the fit occurs during a meal, the mouth should be cleared of all food during the tonic stage, for with the return of respiration food may be drawn into the larynx and cause choking.
6. If the fit occurs at night, care must be taken that the patient does not suffocate from lying face downwards on the pillow.

(B) The following are *rules* for the welfare of the epileptic in the intervals between the fits :

By Day—

1. Epilepties usually require to be under constant supervision.
2. Prevent the climbing of ladders or up high places, or standing near open fireplaces.
3. Do not allow them to overfill the mouth with food during meals.
4. Carefully watch the patient, and learn, if possible, any symptom or symptoms which usually forebode a fit in that individual.
5. If a patient is found usually to fall on the back of his head or face, a padded turban should be worn to avoid injury.
6. The bowels must be carefully attended to and kept freely open.

7. Nitrogenous foods, such as meats of all kinds, should be given sparingly.

By Night—

1. The bedstead should be a low one, lest the patient fall off it during a fit.
2. The epileptic should sleep on a hard pillow, or what is frequently used is a patent pillow stuffed with weed, which permits respiration through it in the event of the patient lying unconscious with his face downwards.
3. He should never be left unattended.
4. False teeth should always be removed at night.

Hysteria.—Hysteria is a definite disorder, and is not a form of malingering, as so many people believe. It occurs most frequently in the female sex, and between the ages of fifteen and twenty-five years. The patients are usually neurotic subjects whose parents or relatives not uncommonly exhibit signs of nervous disorder. It occurs both among the wealthy and the poor, and may follow a severe illness or other form of mental and physical exhaustion. It manifests itself in many different forms, and the symptoms include mental as well as bodily changes. The bodily symptoms consist of exaggeration, diminution, or perversion of sensation; for example, there may be loss of sensation in one limb, or maybe the whole side of the body is affected; similarly, one or more limbs may be paralyzed. The various systems of the body may exhibit changes; there may be constant vomiting after food, retention of urine, high temperature, rapid loss of body-weight, and pain in various positions. The patient may have a fit which at first sight resembles an epileptic seizure, but it will be found to differ in the following ways:

1. The patient does not fall with the suddenness of the epileptic, and seldom injures herself.
2. The fit is not divided into such marked stages; for instance, the tonic stage is not so general all over the

body, and there appears to be more design in the movements.

3. The eyes are closed, the eyelids are tremulous, and the eyeball may be turned inwards or outwards.
4. The patient may scream or ejaculate words during the attack.
5. The tongue is not bitten.
6. There is no definite clonic stage, and the fit lasts longer than the epileptic seizure, and usually in the place of the coma, or sleep, the patient has wild outbursts of laughing or crying. The severe fits are not very common.

The *mental* characteristics of the hysterical person are fairly definite. She is usually—

1. Constantly craving for the sympathy of others.
2. Always thinking of herself.
3. Jealous.
4. Fault-finding.
5. Exaggerating.
6. Very emotional.
7. Indolent, but at times over-active.

There are many other bodily and mental symptoms, which are too technical for a nurse to understand.

Management.—Never allow the patient to think either by what is said or done that she is looked upon as a malingerer. Too much sympathy is bad, and the patient requires to be firmly but kindly treated, receiving constant encouragement. Let it be borne in mind that any irritability that she may show is the result of illness. She requires a regular life and plenty of rest. The diet should be liberal and of a nourishing nature, eggs and milk being specially useful. Exercise should be taken in the strictest moderation. The nurse must give careful attention to the patient's bowels, and also report if there is any retention of urine, as this is a symptom which may arise in some cases.

Neurasthenia is a fatigue condition, and, as the whole nervous system tires equally, the disorder will be found to include mental, motor, and sensory disturbances. It most commonly occurs, in persons of either sex, in the prime of life. There is usually a history of prolonged mental or physical fatigue or a severe shock or accident. The mental symptoms are irritability, restlessness, loss of control, inability to fix attention or to follow daily work. Vague fears arise, and the patient lacks confidence in himself. He complains that he cannot think, and his speech may become hesitating. Headaches are common, especially sensations of pressure on the top of the head. Sleep is usually bad. The physical health fails and the patient loses weight, but the general nutrition may be quite good. He starts at the slightest sound, and he suffers from flutterings about the heart. Indigestion and constipation are usually present. The muscles are irritable and tremulous, and the patient may complain of vague pains about the spine or joints.

As the disorder develops slowly, its course is usually a tedious one, but many recover if proper treatment is begun early enough. A man who has had a severe head injury may never be able to work again, even in spite of the fact that his general health is good.

Management.—Rest and good feeding are of the utmost importance. A modified rest-cure may be advised. But the patient requires much encouragement, and usually it is necessary to have him removed from the care of his friends. Rest in bed and in the open air is to be strongly advised whenever possible, and the dietary should at first consist of plenty of eggs and milk.

SECTION VI

GENERAL DUTIES OF ATTENDANTS

An asylum is a place of protection, designed solely for the care and treatment of the patients whom it receives; that is to say, for those who are ill, who are mentally afflicted. It is a hospital of a special kind to promote recovery, to secure safety, and to insure comfort and welfare for the insane. It is a medical institution dealing with diseases and disorders of body and mind, and those so suffering are under medical direction. No one who cannot grasp these leading ideas, and hold them firmly, is fit for employment as an attendant or mental nurse. An asylum is a school for all the virtues, a hospital which demands of its staff, when on duty, all their energies, all their time, and all their best services.

This concluding chapter is designed to state, briefly and clearly, the principal duties of an attendant. It is a summary of the teaching given in the Handbook, amplified by lectures and practical instruction in the wards. It is to be studied immediately on entering what is now recognized as a noble profession; to be kept in mind until it is perfectly familiar; to be considered as an introduction to the wider knowledge and experience which are requisite in order to attain proficiency in mental nursing. It should be read in conjunction with the rules of the asylum in which the nurse or attendant may happen to be engaged; it is not intended to act as a substitute for those rules, but merely to supplement them, and perhaps in some degree to explain the reasons why they have been formulated and require to be strictly enforced.

It is important that those who are engaged in the care of the insane should recognize the gravity of the charge entrusted to them, and that the duties connected therewith require the enduring exercise of much kindness, firmness, sobriety of demeanour, and an intelligent appreciation of, and obedience to, the rules and orders which may from time to time be laid down for their guidance. These duties, like all others, must be learnt, and it is therefore necessary that attendants should make themselves thoroughly familiar with the special rules and regulations of the asylum in which they may happen to be serving, as well as with the facts and teaching contained in the previous portion of this book, and the practical hints which form the subject of the present chapter.

The general principles which ought to guide attendants in the discharge of their duties are indicated in the declaration which is usually signed before they enter on asylum work. By that declaration they pledge themselves to promote the objects of the institution, to further the recovery of the patients, and to secure their comfort, welfare, and safety. This chapter is designed to show, in brief, how that pledge may be redeemed.

Attendants should always remember that **their position is one of great trust and responsibility**; that, under the direction of the officers and seniors, they have the care of those who, through affliction, cannot care for themselves; and that upon their exertions the recovery, comfort, happiness, and safety of the patients in great measure depend; while any disregard of rules, or a want of constant vigilance and care, may be the occasion of some dire calamity, bringing discredit, not only upon those directly responsible, but upon all who are associated with them in the work of the asylum. An attendant should consider himself part of a large, important, and beneficent organization, in the satisfactory working of which he should take a personal pride; he should endeavour by every legitimate means in his power to promote its interests and usefulness; as in so doing he will not only enhance the

good name of his asylum, but will add to his own reputation as a member of its staff.

Attendants should be cheerful, gentle, forbearing, patient, and humane in speech and action, and should themselves set an example of industry, order, cleanliness, and obedience. Patients should be managed by tact and kindness, and treated with perfect candour and truthfulness in all honesty of purpose; no deception should be employed towards them; delusions should not be laughed at, nor, on the other hand, is it well to make much of them. Irksome restrictions are to be avoided, and there should be no interference with patients who are doing no harm. Violence on the part of a patient must never be met by similar conduct from an attendant. Profane, angry, irritating, or threatening language should be scrupulously avoided; and efforts made to discourage its use by patients.

Anything in the shape of a **blow**, no matter how slight, or **ill-treatment** in any form whatever, given to a patient by an attendant, renders the offender liable to prosecution under the Lunacy Acts,* which impose very heavy penalties upon anyone

* Lunacy Act, 1890.—Section 322: 'If any manager, officer, nurse, attendant, servant, or other person employed in an institution for lunatics, or any person having charge of a lunatic, whether by reason of any contract or of any tie of relationship, or marriage, or otherwise, ill-treats or wilfully neglects a patient, he shall be guilty of a misdemeanour, and, on conviction on indictment, shall be liable to fine or imprisonment at the discretion of the court, or be liable on summary conviction for every offence to a penalty not exceeding twenty pounds nor less than two pounds.'

Section 323: 'If any manager, officer, or servant of an institution for lunatics wilfully permits or assists, or connives at the escape or attempted escape of a patient, or secretes a patient, he shall for every offence be liable to a penalty not exceeding twenty pounds nor less than two pounds.'

Section 324: 'If any manager, officer, nurse, attendant, or other person employed in any institution for lunatics (including an asylum for criminal lunatics), or workhouse, or any person having the care or charge of any single patient, or any attendant of any single patient, carnally knows or attempts to have carnal knowledge of any female under care or treatment as a lunatic in the institution, or workhouse, or as a single patient, he shall be guilty of a mis-

wilfully permitting, assisting, or conniving at the escape of a patient, and upon an attendant convicted of misconducting himself with a female patient.

The **occupation and amusement** of the patients are most important parts of their treatment, as well as of the duty of an attendant; and it should be carried out with as much care and regularity as would the administration of any medicine that might be ordered. The capabilities of each patient must be separately studied; that is the plea for individual treatment. Fatigue and indolence are both to be avoided. It follows that instructions given as to letters, etc., are of special importance.

Attendants should exercise a constant **supervision** over all patients entrusted to them. When on duty, they should not leave the wards, except in obedience to instructions; and under no circumstances should a ward ever be left without an attendant, so long as there are any patients in it not on parole.

A great advance in medical science is marked by the modern strict attention to **hygiene**, which is of general and personal importance; and that advance includes the recognition of the various kinds of **microbes** and their effects. It is a consequence of the study of these matters that so much attention is given to ventilation, food, etc., with the result that preventable diseases and deaths are yearly declining. But there is also a

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demeanour, and, on conviction on indictment, shall be liable to be imprisoned with or without hard labour for any term not exceeding two years; and no consent or alleged consent of such female thereto shall be any defence to an indictment or prosecution for such offence.'

In Scotland similar offences are punished under 20 and 21 Vict., cap. 71, section 99: 'If any superintendent, inspector, officer or servant,or other person, employed in any public, private, or district asylum or house, or otherwise having the care of any person detained as a lunatic patient . . . shall wilfully maltreat, abuse, or neglect any person so detained to the injury of such person, such superintendent, inspector, officer or servant, or other person, shall be guilty of an offence, and for every such offence be liable in a penalty not exceeding one hundred pounds, or to be imprisoned for any period not exceeding six months.'

In Ireland similar provisions are contained in the Lunacy Acts.

hygiene of the mind, and a well-kept, orderly, comfortable ward rarely fails to exercise a beneficial influence, even upon those patients who may at first sight appear to be incapable of appreciating the character of their **surroundings.** Attendants should see that the wards and dormitories are properly ventilated, and that the temperature is maintained at or near the point indicated in their instructions. The patients should be kept neat and tidy, not only in the wards, but in the airing courts, or when out for walks, and the most scrupulous personal cleanliness should be constantly enforced; a dirty head, except in the case of a recent admission, should be unknown in an asylum; while patients with faulty habits should receive the special attention of the attendants, as much improvement may be effected in some cases by seeing that regular visits to the closet are made at stated periods, and thus a good habit may be established and a bad one eradicated.

Newly-admitted patients, as well as those who are dangerous, destructive, or dirty, should receive unceasing attention; while those who are prone to escape likewise require constant care; and it must not be forgotten that many seemingly quiet patients are, at times, liable to become dangerous to themselves and others, while many are unduly sensitive, although that is concealed by their malady.

Attendants should avoid **gossip,** and should be very guarded as to what they say in the presence of the patients, and on no account should reports be made in the hearing of those referred to; nor should attendants discuss the affairs of the establishment or the patients and their peculiarities with anyone outside the asylum.

The following are examples of occurrences which call for **immediate and special report**: Accidents, violence (struggles), bodily illness, refusal of food, difficulty of swallowing, injuries, extraordinary mental symptoms, eruptions on the skin, shiverings, succession of fits, unusually threatening language (suicidal or homicidal), depression of spirits, attempts at escape, loss of keys, knives, etc. It should be clearly understood by the

attendant that the emergencies mentioned in this paragraph are not the only ones that should be reported at once, as others may at any time arise which call for a special and immediate report. Pending the arrival of the doctor, all the facts of the case should be ascertained. Reference may here be made to the importance of the routine examination, the points of which should be committed to memory, from p. 65.

Nothing should be looked upon as of too trifling importance to notice in dealing with the insane; and a good attendant will be always on the watch for symptoms or other matters which, small in themselves, may, if disregarded, lead to trouble and anxiety for all concerned. *An attendant has to think for his patient about everything.* He has to search for and note and report all the bodily conditions underlying the mental disorder. While he ought to treat the patient as a reasonable being, the attendant must bear in mind that a patient's troubles have a cause which may be even unimportant, yet discoverable and removable. Nevertheless, what the doctor requires is a statement of facts rather than opinions, and it is the best plan to keep accurate notes in order to be able to supply these facts.

Especially is this true in the case of patients who have **suicidal tendencies.** So much ability and shrewdness are displayed by this class in the endeavour to accomplish their purpose, that the only plan is to adopt the rule which is, on the whole, a safe one—namely: NEVER ON ANY ACCOUNT, NOR FOR EVEN THE VERY SHORTEST PERIOD, PERMIT ANY PATIENT OF SUICIDAL TENDENCIES OUT OF YOUR SIGHT, NO MATTER UPON WHAT EXCUSE OR HOW PLAUSIBLY THE DESIRE FOR PRIVACY MAY BE URGED, UNTIL THOSE UNDER WHOSE AUTHORITY YOU ARE ACTING WITHDRAW THE NOTICES USUALLY ISSUED TO ALL WHO HAVE THE CARE OF SUICIDAL PATIENTS. Such patients should also be **frequently searched** during the day; and at night care should be taken that nothing is concealed about their beds or persons that might be used as an instrument of self-destruction.

When it is necessary to search a patient, it should be done thoroughly, but in such a manner as to avoid irritating him, and to give as little annoyance as possible. All rubbish, food, and anything that might be converted into a dangerous weapon, should be taken away; but many patients treasure possessions of little value to anyone but themselves, of which it would be positive cruelty to deprive them.

Much ingenuity is often exhibited by patients in the construction of dangerous **weapons** from all sorts of out-of-the-way articles, such as broken stay-busks, pieces of old iron, nails, slate, glass, etc.; while stockings, neckties, boot-laces, tapes, garters, apron-strings, strips of calico and dress-material, braces, bandages, blind-cord, round towels, etc., have each at various times been used, often, unfortunately, with fatal effect, by patients who are afflicted by this most distressing and harassing symptom of mental disorder.

The possibility of suicide by the improper use of the common **lucifer match** should not be overlooked, and attendants should be careful not to introduce matches of this description, but invariably to use the safety matches now supplied in asylums; thus giving an additional security, not only from suicide, but also from risk of fire.

It is important that articles which might possibly be converted into dangerous weapons should be kept out of the way, not only of the suspected, but also **from all other classes of patients**; nothing is easier than for a cunning suicidal patient to obtain from a quiet and apparently harmless dement some article which, while only a plaything in the hands of the latter, becomes a formidable weapon under the manipulation of the former.

Knives, scissors, razors, and every other description of cutting instrument, should be kept under lock and key when not in use, and should be **counted** at least once a day. Broken glass and crockery should be entirely and immediately removed out of reach of patients.

A persistent effort should always be made to ascertain, if

possible, the cause of any smell of fire or gas, or any other offensive or unusual odour; and, in case of failure to trace the origin of the nuisance, a report on the subject should be made without delay to a superior officer.

All doors, windows, shutters, fire-guards, etc., should be closely and constantly inspected, and any defect, however trifling, reported.

Pokers, fire-shovels, towel-rollers, brooms, mops, deck-scrubbers, etc., may prove awkward articles in the hands of a violent patient, and for this reason, as well as for others, should be kept in a **locked cupboard** when not in use.

Medicines should never be entrusted to the care of patients, but should be placed under lock and key, and should not be kept in the same cupboard as disinfectants, many of which are of a corrosive and poisonous nature. Not more than the exact dose of a medicine should be given; and this should be ascertained by carefully reading the instructions on the label each time the medicine is administered.

Patients should not be allowed to enter such places as **attendants' rooms**, where forbidden articles may be inadvertently left, instead of being in a place of security. **Keys** should never be left in the lock or lying about, and the loss of one should be reported immediately.

The risk of suicide by burning should be minimized by the proper protection of all **fires** and by guarding **lights**; and the possibility of a patient being scalded or drowned in a **bath** is to be avoided by the attendant retaining the bath-key always in his own possession; by always turning on the cold water first; by keeping the waste-tap open when the bath is not in use; and by never leaving a patient in the room while there is any water remaining in the bath.

No interference with any patient, still less with a violent one, should be practised, unless he is actually dangerous to himself or others; and even then it should not be continued longer than is absolutely necessary.

In dealing with a violent patient, the knees should not be

placed on any part of the body, and twisting the wrist should never be practised. Serious injury to the attendant may be caused by neglecting to remove the boots from a violent patient, as soon as it is possible to do so.

Attendants should always report at once to the proper official the occurrence of a struggle, so that any injury that might possibly have taken place may be discovered and treated without delay. The observance of this rule is as important in the interests of the attendant as it is for the safety of the patient.

Epileptics are often very malicious and spiteful towards those against whom they have any real or fancied grievance; but, as this is only part of their general malady, an attendant should never regard or treat their actions as he would those of a person not so afflicted, no matter how calm or rational the epileptic may appear to be during the intervals between his attacks. It is well to mention also that epileptics will often attempt to bite those about them with whom they may happen to be at variance. Epileptics are very apt to injure themselves by falling, and in many cases this is quite unavoidable; but it is sometimes possible, with a little judgment and knowledge of a patient's habits, to make such arrangements as tend to diminish the risk, and avoid the very disfiguring marks and injuries which otherwise frequently occur. For example, when it is known that a patient usually falls forward or backward on his head, a suitable padded cap may be worn, or the patient may be placed in such a position as the known circumstances of the case suggest as advisable; while nothing is more calculated to do good to an epileptic threatened with severe fits than treatment in bed under constant observation. When an epileptic, or, indeed, any patient, has had a fall, it is important to ascertain, before raising him to his feet, that no bone has been broken or other injury sustained.

Great care should be taken, when a patient is seized with a fit at meal-times, to see that the mouth is clear; and the

danger of **suffocation** during a fit at night can only be entirely prevented by placing the patient in an observation dormitory, and, if a special case, in a bed close to the station of the night attendant.

Every attendant should learn how to deal with such an emergency as choking; and full instructions are given at p. 53 of this Handbook how to act pending the arrival of the medical officer, who should be summoned at once.

Epileptics should not be permitted to go either up or down-stairs alone; but should be accompanied by an attendant, who, on going upstairs, should follow the patient, and in descending precede him.

In an ordinary epileptic fit the mouth of the patient should be cleared if necessary, the necktie or dress loosened, and care should be taken that suffocation does not occur from turning over on the face. After the convulsion has ceased, a pillow should be placed under the head, and the patient allowed to lie quiet for a time if so disposed. A patient having a succession of fits should be reported without delay to the medical officer or head attendant.

General paralytic patients frequently require the exercise of all the skill and patience of an attendant, in order to protect them from injuring themselves, or receiving an injury from those about them. These patients are frequently very unsteady on their feet, restless, constantly endeavouring to get in and out of bed, and prone to interfere with others.

The **bones** of the general paralytic are often very **brittle**, so that he must be handled with great care, and, in the advanced stages of the disease, bed-sores can only be guarded against by the most skilful nursing. General paralytics are even more liable to be **choked** by food than epileptics. The food should be soft, free from lumps, and readily swallowed; and if the patient is able to feed himself, it is advisable to furnish him with a dessert-spoon instead of the table-spoon generally used; but the better plan is for an attendant to feed the patient, great care being taken that one spoonful is swallowed

before another is given. Accidents have frequently occurred from the propensity, which is not uncommon with this class of patient, to appropriate improper food; so that it is well to deprive them of any opportunity of obtaining solid, or otherwise unsuitable, food, by placing them at a table apart from the other patients; while it is all-important to see that they have quite emptied the mouth before permitting them to leave the table. An observant attendant would draw the attention of the medical officer to any patient who shows signs indicating the necessity for the substitution of a soft or minced diet in lieu of that ordinarily provided.

The special **bath rules** in force in every asylum should be strictly observed, as many patients have died in consequence of such regulations being disregarded, or carried out with insufficient care by the attendant. It may not be out of place especially to emphasize the necessity of—(*a*) using the thermometer when preparing a bath, so as to insure that the temperature indicated thereby is that ordered by the rules or special directions; (*b*) turning on cold water first, seeing there is sufficient in the bath before the hot is turned on, and keeping the hot and cold water constantly stirred, so that the temperature of the bath may be uniform before the patient is permitted to use it; (*c*) never turning on the hot water while the patient is in the bath; (*d*) never forcing the patient's head under water; (*e*) seeing that the water is turned off, the bath empty, the waste-valve open, and the patient out of the room before the attendant leaves; (*f*) never giving a cold or shower bath without a special order; (*g*) never lending a bath-key, or, indeed, any other key, to a patient.

No patient may be subjected to any **seclusion, mechanical restraint or privation** (such as of food, tobacco, etc.), without a special order from the medical officer. By *seclusion* is meant the placing of a patient alone in any locked room or locality during the daytime. By *mechanical restraint* is understood any restriction of the bodily liberty of a patient by some appliance, such as a sheet, rope, strait-jacket, towel, or straps.

To those who have not had considerable experience in dealing with the mentally afflicted many of the suggestions and warnings contained in this chapter may appear fanciful and unnecessary; but, as a matter of fact, the majority of them are founded upon reported cases which have actually occurred; and all are given as the result of long and intimate acquaintance with the insane and their numerous peculiarities.

While it is very important that due attention should be paid to the rules laid down for the discipline of the establishment and the guidance of attendants, yet, as it is impossible to formulate a code of regulations that shall provide for all the emergencies which may occur in the everyday life of an asylum, much must be left to the common-sense and judgment of those directly engaged with the patients. A good attendant knows his own mind, he has attained self-control; he has a grasp of hygiene, bodily and mental, and he possesses those moral qualifications which are summed up in *character;* he takes a personal interest in the welfare of those placed under his charge; he is persevering in his efforts to promote their recovery and well-being in every possible way; and, in order to do all this, it is necessary that he should observe their peculiarities and minute points of conduct. He must encourage patients by his example; control their waywardness by his firmness, gentleness and patience; and he should never forget that even the most demented may have their heavy burden lightened by his treatment, while the prospect of restoring health to many of those entrusted to him should be a powerful incentive to exertion, and its successful accomplishment a reward for the anxieties which must inevitably be the lot of all who conscientiously undertake the care and management of the insane.

APPENDIX

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

REGULATIONS FOR THE TRAINING AND EXAMINATION OF CANDIDATES FOR THE CERTIFICATE OF PROFICIENCY IN NURSING AND ATTENDING ON THE INSANE

As, at the time of this edition of the Handbook being published, important changes are being effected in these Regulations, they cannot be inserted. Application for information concerning them should be made, in the first instance, to the Medical Superintendent of an asylum; or, if that be impossible, to the Registrar of the Medico-Psychological Association, 11, Chandos Street, Cavendish Square, London, W.

SYLLABUS OF TRAINING AND EXAMINATION.

Materials of Body Structure.—Names and uses of the more common, their relation to, and connection with, each other; elementary description of structure and functions of the skin, fat, muscle, bone.

Framing of the Body.—Skull, spine, chest, trunk, limbs, names of the principal bones, description of joints, movements of the body, how effected.

Organs of the Body.—Grouping into systems. *Circulatory system*—Composition of blood, the heart and bloodvessels, relation of circulation to respiration. *Respiration*—Mechanism of it, lungs, air-passages, chief changes in blood caused by respiration. *Alimentary system*—Description of the alimentary canal and its divisions, secreting organs, glands, process of digestion, classification of foods,

effects of digestion, absorption, assimilation. *Excretory system*—Excretion by particular organs, the kidneys, etc. *Nervous system*—Brain and its chief divisions, white and grey matter, spinal cord, sympathetic nerves, nerves, elementary physiology, motion, sensation, the special senses, reflex action.

General Conditions of Health.—Temperature of the body, weight of body, sleep and sleeplessness, waste and repair, and signs thereof.

Symptoms of Disease and Disorder.—Of the skin, the insane ear, of muscles, bones, and joints, fractures and dislocations of bones. *Of the organs of circulation*—Signs of obstruction of the circulation, syncope, heart dropsy, varicose veins. *Of the respiratory system*—Chief varieties, cough, spit, pain, disturbed breathing, fever, etc., chief causes. *Of the alimentary system*—Indigestion, its causes and symptoms, the tongue, flatulence, vomiting, diarrhœa, constipation. *Of the excretory system*—Urine, its quantity, colour, etc., kidney dropsy, coma, convulsions. *Of the nervous system*—Pain, loss of sensation, involuntary movements, convulsions, tremor, loss of power of movement, reflex and sympathetic symptoms.

General Symptoms of Disease.—Derangement of temperature, shivering, pain, loss of weight.

General Management of Illnesses.

Mind and its Disorders.—The seat of mind, healthy mind, intellect, will, feelings, instincts, memory, unsound mind, how defined and tested, mental depression, exaltation, enfeeblement and perversion, hallucinations, illusions, delusions, fixed delusions, condition of will, weak will, impulse, how far the insane are responsible, changes in emotions, insane habits and peculiarities, refusal of food, suicide, causes and methods, homicide, causes and methods, chief varieties of insanity, idiocy, imbecility, melancholia, mania, dementia, general paralysis, epileptic insanity, clinical varieties of insanity.

Nursing of the Sick.—*Management of sick-rooms*—Their ventilation, temperature, cleanliness, warmth, quiet, disinfectants. *Personal attention to the sick*—Diet, administration of medicine, method of cleansing sick persons, bed-sores, their causes, prevention, and management, making of beds, waterproof-sheets, draw-sheets, water-beds, hot bottles, etc. *Observation of cases*—Charts, records, and reports of symptoms, points to be noted, external indications of illness, taking temperature of body, counting pulse and respirations. *Appliances, etc.*—Cold dressings, wet compresses, poultices, fomentations, stupes, enemas, suppositories, steaming and inhalations, baths, wet packing, sponging, bandaging, carrying of helpless patients, use of stretcher. Forcible feeding. *Emergencies, principles of management in*—Fainting, epileptic fits, apoplexy, choking, hæmorrhage, fractures of bones, hanging or strangulation,

drowning, suffocation, burning or scalding, poisoning. Artificial respiration.

Nursing and Care of the Insane.—Responsibility of attendants. *Management of the bodily condition*—Cardinal principles, general duties, ventilation of rooms, cleanliness and order, reports of symptoms of illness, examination and observation of patients, wet and dirty cases, choking at meals, etc., rules for bathing patients, seclusion, restraint. *Management of the mental condition*—Observation of the rules of the asylum, routine, dealing with delusions, insane habits, occupation and amusements, liberty and escapes, precautions against suicide and homicide, violent patients, assaults, struggles, and use of force, epileptics, reporting of mental changes. Bearing of attendants to patients, promises to patients.

Attendance on the Insane in Private Houses.—Differences between it and asylum attendance, reports to the doctor, responsibilities, risks and precautions, bearing towards other inmates of the house.

Full size of Badge.

The Council of the Medico-Psychological Association have approved of a badge to be worn by the holders of the Certificate of Proficiency in Mental Nursing.

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The badge is in bronze, and can be had with a brooch-pin or with a ring suspender.

Further particulars may be obtained from the Registrar of the Association.

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